Aerobus

v1.2

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Chapter 1

Introduction

Aerobus is a C++-20 pure header library for general algebra on polynomials, discrete rings and associated structures.

Everything in Aerobus is expressed as types.

We say that again as it is the most fundamental characteristic of Aerobus :

Everything is expressed as types

The library serves two main purposes :

- Express algebra structures and associated operations in type arithmetic, compile-time;
- Provide portable and fast evaluation functions for polynomials.

It is designed to be 'quite easily' extensible.

Given these functions are "generated" at compile time and do not rely on inline assembly, they are actually platform independent, yielding exact same results if processors have same capabilities (such as Fused-Multiply-Add instructions).

1.1 HOW TO

- Clone or download the repository somewhere, or just download `aerobus.h`
- In your code, add : `#include "aerobus.h"`
- Compile with -std=c++20 (at least) -I<install_location>

Aerobus provides a definition for low-degree (up to 997) Conway polynomials. To use them, define AEROBUS↩_CONWAY_IMPORTS before including aerobus.h.

1.1.1 Unit Test

Install Cmake Install a recent compiler (supporting c++20), such as MSVC, G++ or Clang++

Move to the top directory then :
```
cmake -S . -B build
cmake --build build
cd build && ctest
```

Terminal should write :
```
100% tests passed, 0 tests failed out of 48
```

Alternate way :
```
make tests
```

From top directory.

1.1.2 Benchmarks

Benchmarks are written for Intel CPUs having AVX512f and AVX512vl flags, they work only on Linux operating system using g++.

In addition of Cmake and compiler, install OpenMP. And Google's Benchmark library. Then move to top directory :
```
rm -rf build
mkdir build
cd build
cmake ..
make benchmarks
./benchmarks
```

1.2 Structures

1.2.1 Predefined discrete euclidean domains

Aerobus predefines several simple euclidean domains, such as :

- aerobus::i32 : integers (32 bits)
- aerobus::i64 : integers (64 bits)
- aerobus::zpz<p> : integers modulo p (prime number) on 32 bits

All these types represent the Ring, meaning the algebraic structure. They have a nested type val<i> where i is a scalar native value (int32_t or int64_t) to represent actual values in the ring. They have the following "operations", required by the IsEuclideanDomain concept :

- add_t : a type (specialization of val), representing addition between two values
- sub_t : a type (specialization of val), representing subtraction between two values
- mul_t : a type (specialization of val), representing multiplication between two values
- div_t : a type (specialization of val), representing division between two values
- mod_t : a type (specialization of val), representing modulus between two values

and the following "elements" :

- one : the neutral element for multiplication, val<1>
- zero : the neutral element for addition, val<0>

1.2.2 Polynomials

Aerobus defines polynomials as a variadic template structure, with coefficient in an arbitrary discrete euclidean domain. As i32 or i64, they are given same operations and elements, which make them a euclidean domain by themselves. Similarly, aerobus::polynomial represents the algebraic structure, actual values are in aerobus::polynomial::val.

In addition, values have an evaluation function :
```
template<typename valueRing> static constexpr valueRing eval(const valueRing& x) {...}
```

Which can be used at compile time (constexpr evaluation) or runtime.

1.2.3 Known polynomials

Aerobus predefines some well known families of polynomials, such as Hermite or Bernstein :
```
using B23 = aerobus::known_polynomials::bernstein<2, 3>; // 3X^2(1-X)
constexpr float x = B32::eval(2.0F); // -12
```

They have their coefficients either in aerobus::i64 or aerobus::q64. Complete list is (but is meant to be extended):

- chebyshev_T
- chebyshev_U
- laguerre
- hermite_prob
- hermite_phys
- bernstein
- legendre
- bernoulli

1.2.4 Conway polynomials

When the tag AEROBUS_CONWAY_IMPORTS is defined at compile time (-DAEROBUS_CONWAY_IMPORTS), aerobus provides definition for all Conway polynomials CP(p, n) for p up to 997 and low values for n (usually less than 10).

They can be used to construct finite fields of order p^n ($\mathbb{F}_{p^n}$):
```
using F2 = zpz<2>;
using PF2 = polynomial<F2>;
using F4 = Quotient<PF2, ConwayPolynomial<2, 2>::type>;
```

1.2.5 Taylor series

`Aerobus` provides definition for Taylor expansion of known functions. They are all templates in two parameters, degree of expansion (`size_t`) and Integers (`typename`). Coefficients then live in `Fraction↩ Field<Integers>`.

They can be used and evaluated:

```
using namespace aerobus;
using aero_atanh = atanh<i64, 6>;
constexpr float val = aero_atanh::eval(0.1F); // approximation of arctanh(0.1) using taylor expansion of
      degree 6
```

Exposed functions are:

- `exp`
- `expm1` $e^x - 1$
- `lnp1` $\ln(x+1)$
- `geom` $\frac{1}{1-x}$
- `sin`
- `cos`
- `tan`
- `sh`
- `cosh`
- `tanh`
- `asin`
- `acos`
- `acosh`
- `asinh`
- `atanh`

Having the capacity of specifying the degree is very important, as users may use other formats than `float64` or `float32` which require higher or lower degree to achieve correct or acceptable precision.

It's possible to define Taylor expansion by implementing a `coeff_at` structure which must meet the following requirement :

- Being template in Integers (`typename`) and index (`size_t`);
- Exposing a type alias `type`, some specialization of `FractionField<Integers>::val`.

For example, to define the serie $1 + x + x^2 + x^3 + \ldots$, users may write:

```
template<typename Integers, size_t i>
struct my_coeff_at {
    using type = typename FractionField<Integers>::one;
};

template<typename Integers, size_t degree>
using my_serie = taylor<Integers, my_coeff_at, degree>;

static constexpr double x = my_serie<i64, 3>::eval(3.0);
```

On x86-64 and CUDA platforms at least, using proper compiler directives, these functions yield very performant assembly, similar or better than standard library implementation in fast math. For example, this code:

```
double compute_expm1(const size_t N, double* in, double* out) {
    using V = aerobus::expm1<aerobus::i64, 13>;
    for (size_t i = 0; i < N; ++i) {
        out[i] = V::eval(in[i]);
    }
}
```

Yields this assembly (clang 17, `-mavx2 -O3`) where we can see a pile of Fused-Multiply-Add vector instructions, generated because we unrolled completely the Horner evaluation loop:

```
compute_expm1(unsigned long, double const*, double*):
  lea     rax, [rdi-1]
  cmp     rax, 2
  jbe     .L5
  mov     rcx, rdi
  xor     eax, eax
  vxorpd  xmm1, xmm1, xmm1
  vbroadcastsd    ymm14, QWORD PTR .LC1[rip]
  vbroadcastsd    ymm13, QWORD PTR .LC3[rip]
  shr     rcx, 2
  vbroadcastsd    ymm12, QWORD PTR .LC5[rip]
  vbroadcastsd    ymm11, QWORD PTR .LC7[rip]
  sal     rcx, 5
  vbroadcastsd    ymm10, QWORD PTR .LC9[rip]
  vbroadcastsd    ymm9, QWORD PTR .LC11[rip]
  vbroadcastsd    ymm8, QWORD PTR .LC13[rip]
  vbroadcastsd    ymm7, QWORD PTR .LC15[rip]
  vbroadcastsd    ymm6, QWORD PTR .LC17[rip]
  vbroadcastsd    ymm5, QWORD PTR .LC19[rip]
  vbroadcastsd    ymm4, QWORD PTR .LC21[rip]
  vbroadcastsd    ymm3, QWORD PTR .LC23[rip]
  vbroadcastsd    ymm2, QWORD PTR .LC25[rip]
.L3:
  vmovupd ymm15, YMMWORD PTR [rsi+rax]
  vmovapd ymm0, ymm15
  vfmadd132pd     ymm0, ymm14, ymm1
  vfmadd132pd     ymm0, ymm13, ymm15
  vfmadd132pd     ymm0, ymm12, ymm15
  vfmadd132pd     ymm0, ymm11, ymm15
  vfmadd132pd     ymm0, ymm10, ymm15
  vfmadd132pd     ymm0, ymm9, ymm15
  vfmadd132pd     ymm0, ymm8, ymm15
  vfmadd132pd     ymm0, ymm7, ymm15
  vfmadd132pd     ymm0, ymm6, ymm15
  vfmadd132pd     ymm0, ymm5, ymm15
  vfmadd132pd     ymm0, ymm4, ymm15
  vfmadd132pd     ymm0, ymm3, ymm15
  vfmadd132pd     ymm0, ymm2, ymm15
  vfmadd132pd     ymm0, ymm1, ymm15
  vmovupd YMMWORD PTR [rdx+rax], ymm0
  add     rax, 32
  cmp     rcx, rax
  jne     .L3
  mov     rax, rdi
  and     rax, -4
  vzeroupper
```

1.3 Operations

1.3.1 Field of fractions

Given a set (type) satisfies the `IsEuclideanDomain` concept, `Aerobus` allows to define its `field of fractions`.

This new type is again a euclidean domain, especially a field, and therefore we can define polynomials over it.

For example, integers modulo p is not a field when p is not prime. We then can define its field of fraction and polynomials over it this way:

```
using namespace aerobus;
using ZmZ = zpz<8>;
using Fzmz = FractionField<ZmZ>;
using Pfzmz = polynomial<Fzmz>;
```

The same operation would stand for any set that users would have implemented in place of ZmZ.

For example, we can easily define rational functions by taking the ring of fractions of polynomials:

```
using namespace aerobus;
using RF64 = FractionField<polynomial<q64>>;
```

Which also have an evaluation function, as polynomial do.

1.3.2 Quotient

Given a ring R, Aerobus provides automatic implementation for quotient ring R/X where X is a principal ideal generated by some element, as we know this kind of ideal is two-sided as long as R is commutative (and we assume it is).

For example, if we want R to be $\mathbb{Z}$ represented as aerobus::i64, we can express arithmetic modulo 17 using:

```
using namespace aerobus;
using ZpZ = Quotient<i64, i64::val<17>>;
```

As we could have using zpz<17>.

This is mainly used to define finite fields of order p^n using Conway polynomials but may have other applications.

1.4 Misc

1.4.1 Continued Fractions

Aerobus gives an implementation for continued fractions. It can be used this way:

```
using namespace aerobus;
using T = ContinuedFraction<1,2,3,4>;
constexpr double x = T::val;
```

As practical examples, aerobus gives continued fractions of π, e, $\sqrt{2}$ and $\sqrt{3}$:

```
constexpr double A_SQRT3 = aerobus::SQRT3_fraction::val; // 1.7320508075688772935
```

1.5 CUDA

When compiled with nvcc and the flag WITH_CUDA_FP16, Aerobus provides some kind of support of 16 bits integers and floats (aka __half).

Unfortunately, NVIDIA did not put enough constexpr in its cuda_fp16.h header, so we had to implement our own constexpr static_cast from int16_t to __half to make integers polynomials work with __half. See this bug.

More, it's (at this time), not possible to make it work for __half2 because of another bug.

Please push to make these bug fixed by NVIDIA.

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

Chapter 3

Concept Index

3.1 Concepts

Here is a list of all concepts with brief descriptions:

Chapter 4

Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 5

File Index

5.1 File List

Here is a list of all files with brief descriptions:

Chapter 6

Namespace Documentation

6.1 aerobus Namespace Reference

main namespace for all publicly exposed types or functions

Namespaces

- namespace internal

  internal implementations, subject to breaking changes without notice
- namespace known_polynomials

  families of well known polynomials such as Hermite or Bernstein

Classes

- struct ContinuedFraction

  represents a continued fraction a0 + $\frac{1}{a_1+\frac{1}{a_2+\dots}}$
- struct ContinuedFraction< a0 >

  Specialization for only one coefficient, technically just 'a0'.
- struct ContinuedFraction< a0, rest... >

  specialization for multiple coefficients (strictly more than one)
- struct ConwayPolynomial
- struct Embed

  embedding - struct forward declaration
- struct Embed< i32, i64 >

  embeds i32 into i64
- struct Embed< polynomial< Small >, polynomial< Large > >

  embeds polynomial<Small> into polynomial<Large>
- struct Embed< q32, q64 >

  embeds q32 into q64
- struct Embed< Quotient< Ring, X >, Ring >

  embeds Quotient<Ring, X> into Ring
- struct Embed< Ring, FractionField< Ring > >

  embeds values from Ring to its field of fractions
- struct Embed< zpz< x >, i32 >

embeds zpz values into i32

- struct i32

  32 bits signed integers, seen as a algebraic ring with related operations
- struct i64

  64 bits signed integers, seen as a algebraic ring with related operations
- struct is_prime

  checks if n is prime
- struct polynomial
- struct Quotient

  Quotient ring by the principal ideal generated by 'X' With i32 as Ring and i32::val<2> as X, Quotient is Z/2Z.
- struct type_list

  Empty pure template struct to handle type list.
- struct type_list<>

  specialization for empty type list
- struct zpz

  congruence classes of integers modulo p (32 bits)

Concepts

- concept IsRing

  Concept to express R is a Ring.
- concept IsEuclideanDomain

  Concept to express R is an euclidean domain.
- concept IsField

  Concept to express R is a field.

Typedefs

- template<typename T , typename A , typename B >
  using gcd_t = typename internal::gcd< T >::template type< A, B >

  computes the greatest common divisor or A and B
- template<typename... vals>
  using vadd_t = typename internal::vadd< vals... >::type

  adds multiple values (v1 + v2 + ... + vn) vals must have same "enclosing_type" and "enclosing_type" must have an add_t binary operator
- template<typename... vals>
  using vmul_t = typename internal::vmul< vals... >::type

  multiplies multiple values (v1 + v2 + ... + vn) vals must have same "enclosing_type" and "enclosing_type" must have an mul_t binary operator
- template<typename val >
  using abs_t = std::conditional_t< val::enclosing_type::template pos_v< val >, val, typename val::enclosing↩
  _type::template sub_t< typename val::enclosing_type::zero, val > >

  computes absolute value of 'val' val must be a 'value' in a Ring satisfying 'IsEuclideanDomain' concept
- template<typename Ring >
  using FractionField = typename internal::FractionFieldImpl< Ring >::type

  Fraction field of an euclidean domain, such as Q for Z.
- template<typename X , typename Y >
  using add_t = typename X::enclosing_type::template add_t< X, Y >

  generic addition
- template<typename X , typename Y >
  using sub_t = typename X::enclosing_type::template sub_t< X, Y >

generic subtraction

- template<typename X , typename Y >
  using mul_t = typename X::enclosing_type::template mul_t< X, Y >

  generic multiplication
- template<typename X , typename Y >
  using div_t = typename X::enclosing_type::template div_t< X, Y >

  generic division
- using q32 = FractionField< i32 >

  32 bits rationals rationals with 32 bits numerator and denominator
- using fpq32 = FractionField< polynomial< q32 > >

  rational fractions with 32 bits rational coefficients rational fractions with rationals coefficients (32 bits numerator and denominator)
- using q64 = FractionField< i64 >

  64 bits rationals rationals with 64 bits numerator and denominator
- using pi64 = polynomial< i64 >

  polynomial with 64 bits integers coefficients
- using pq64 = polynomial< q64 >

  polynomial with 64 bits rationals coefficients
- using fpq64 = FractionField< polynomial< q64 > >

  polynomial with 64 bits rational coefficients
- template<typename Ring , typename v1 , typename v2 >
  using makefraction_t = typename FractionField< Ring >::template val< v1, v2 >

  helper type : the rational V1/V2 in the field of fractions of Ring
- template<typename v >
  using embed_int_poly_in_fractions_t = typename Embed< polynomial< typename v::ring_type >, polynomial< FractionField< typename v::ring_type > > >::template type< v >

  embed a polynomial with integers coefficients into rational coefficients polynomials
- template<int64_t p, int64_t q>
  using make_q64_t = typename q64::template simplify_t< typename q64::val< i64::inject_constant_t< p >, i64::inject_constant_t< q > > >

  helper type : make a fraction from numerator and denominator
- template<int32_t p, int32_t q>
  using make_q32_t = typename q32::template simplify_t< typename q32::val< i32::inject_constant_t< p >, i32::inject_constant_t< q > > >

  helper type : make a fraction from numerator and denominator
- template<typename Ring , typename v1 , typename v2 >
  using addfractions_t = typename FractionField< Ring >::template add_t< v1, v2 >

  helper type : adds two fractions
- template<typename Ring , typename v1 , typename v2 >
  using mulfractions_t = typename FractionField< Ring >::template mul_t< v1, v2 >

  helper type : multiplies two fractions
- template<typename Ring , auto... xs>
  using make_int_polynomial_t = typename polynomial< Ring >::template val< typename Ring::template inject_constant_t< xs >... >

  make a polynomial with coefficients in Ring
- template<typename Ring , auto... xs>
  using make_frac_polynomial_t = typename polynomial< FractionField< Ring > >::template val< typename FractionField< Ring >::template inject_constant_t< xs >... >

  make a polynomial with coefficients in FractionField<Ring>
- template<typename T , size_t i>
  using factorial_t = typename internal::factorial< T, i >::type

  computes factorial(i), as type

- template<typename T , size_t k, size_t n>
  using combination_t = typename internal::combination< T, k, n >::type

  computes binomial coefficient (k among n) as type
- template<typename T , size_t n>
  using bernoulli_t = typename internal::bernoulli< T, n >::type

  nth bernoulli number as type in T
- template<typename T , size_t n>
  using bell_t = typename internal::bell_helper< T, n >::type

  Bell numbers.
- template<typename T , int k>
  using alternate_t = typename internal::alternate< T, k >::type

  (-1)^k as type in T
- template<typename T , int n, int k>
  using stirling_1_signed_t = typename internal::stirling_1_helper< T, n, k >::type

  Stirling number of first king (signed) – as types.
- template<typename T , int n, int k>
  using stirling_1_unsigned_t = abs_t< typename internal::stirling_1_helper< T, n, k >::type >

  Stirling number of first king (unsigned) – as types.
- template<typename T , int n, int k>
  using stirling_2_t = typename internal::stirling_2_helper< T, n, k >::type

  Stirling number of second king – as types.
- template<typename T , typename p , size_t n>
  using pow_t = typename internal::pow< T, p, n >::type

  p^n (as 'val' type in T)
- template<typename T , template< typename, size_t index > typename coeff_at, size_t deg>
  using taylor = typename internal::make_taylor_impl< T, coeff_at, internal::make_index_sequence_reverse< deg+1 > >::type
- template<typename Integers , size_t deg>
  using exp = taylor< Integers, internal::exp_coeff, deg >

  e^x
- template<typename Integers , size_t deg>
  using expm1 = typename polynomial< FractionField< Integers > >::template sub_t< exp< Integers, deg >, typename polynomial< FractionField< Integers > >::one >

  $e^x - 1$
- template<typename Integers , size_t deg>
  using lnp1 = taylor< Integers, internal::lnp1_coeff, deg >

  $\ln(1 + x)$
- template<typename Integers , size_t deg>
  using atan = taylor< Integers, internal::atan_coeff, deg >

  $\arctan(x)$
- template<typename Integers , size_t deg>
  using sin = taylor< Integers, internal::sin_coeff, deg >

  $\sin(x)$
- template<typename Integers , size_t deg>
  using sinh = taylor< Integers, internal::sh_coeff, deg >

  $\sinh(x)$
- template<typename Integers , size_t deg>
  using cosh = taylor< Integers, internal::cosh_coeff, deg >

  $\cosh(x)$ *hyperbolic cosine*
- template<typename Integers , size_t deg>
  using cos = taylor< Integers, internal::cos_coeff, deg >

  $\cos(x)$ *cosinus*
- template<typename Integers , size_t deg>
  using geometric_sum = taylor< Integers, internal::geom_coeff, deg >

$\frac{1}{1-x}$ *zero development of* $\frac{1}{1-x}$

- template<typename Integers , size_t deg>
  using asin = taylor< Integers, internal::asin_coeff, deg >

  $\arcsin(x)$ *arc sinus*
- template<typename Integers , size_t deg>
  using asinh = taylor< Integers, internal::asinh_coeff, deg >

  $\operatorname{arcsinh}(x)$ *arc hyperbolic sinus*
- template<typename Integers , size_t deg>
  using atanh = taylor< Integers, internal::atanh_coeff, deg >

  $\operatorname{arctanh}(x)$ *arc hyperbolic tangent*
- template<typename Integers , size_t deg>
  using tan = taylor< Integers, internal::tan_coeff, deg >

  $\tan(x)$ *tangent*
- template<typename Integers , size_t deg>
  using tanh = taylor< Integers, internal::tanh_coeff, deg >

  $\tanh(x)$ *hyperbolic tangent*
- using PI_fraction = ContinuedFraction< 3, 7, 15, 1, 292, 1, 1, 1, 2, 1, 3, 1, 14, 2, 1, 1, 2, 2, 2, 2, 1 >
- using E_fraction = ContinuedFraction< 2, 1, 2, 1, 1, 4, 1, 1, 6, 1, 1, 8, 1, 1, 10, 1, 1, 12, 1, 1, 14, 1, 1 >

  approximation of e
- using SQRT2_fraction = ContinuedFraction< 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2 >

  approximation of $\sqrt{2}$
- using SQRT3_fraction = ContinuedFraction< 1, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2 >

  approximation of

Functions

- template<typename T >
  T * aligned_malloc (size_t count, size_t alignment)
- brief Conway polynomials tparam p characteristic of the field (prime number) @tparam n degree of extension template< int p

Variables

- template<typename T , size_t i>
  constexpr T::inner_type factorial_v = internal::factorial<T, i>::value

  computes factorial(i) as value in T
- template<typename T , size_t k, size_t n>
  constexpr T::inner_type combination_v = internal::combination<T, k, n>::value

  computes binomial coefficients (k among n) as value
- template<typename FloatType , typename T , size_t n>
  constexpr FloatType bernoulli_v = internal::bernoulli<T, n>::template value<FloatType>

  nth bernoulli number as value in FloatType
- template<typename T , size_t k>
  constexpr T::inner_type alternate_v = internal::alternate<T, k>::value

  (-1)^k as value from T

6.1.1 Detailed Description

main namespace for all publicly exposed types or functions

6.1.2 Typedef Documentation

6.1.2.1 abs_t

```
template<typename val >
using aerobus::abs_t = typedef std::conditional_t< val::enclosing_type::template pos_v<val>,
val, typename val::enclosing_type::template sub_t<typename val::enclosing_type::zero, val> >
```

computes absolute value of 'val' val must be a 'value' in a Ring satisfying 'IsEuclideanDomain' concept

Template Parameters

val	a value in a RIng, such as i64::val<-2>

6.1.2.2 add_t

```
template<typename X , typename Y >
using aerobus::add_t = typedef typename X::enclosing_type::template add_t<X, Y>
```

generic addition

Template Parameters

X	a value in a ring providing add_t operator
Y	a value in same ring

6.1.2.3 addfractions_t

```
template<typename Ring , typename v1 , typename v2 >
using aerobus::addfractions_t = typedef typename FractionField<Ring>::template add_t<v1, v2>
```

helper type : adds two fractions

Template Parameters

Ring	
v1	belongs to FractionField<Ring>
v2	belongs to FranctionField<Ring>

6.1.2.4 alternate_t

```
template<typename T , int k>
using aerobus::alternate_t = typedef typename internal::alternate<T, k>::type
```

(-1)^k as type in T

Template Parameters

T	Ring type, aerobus::i64 for example

6.1.2.5 asin

```
template<typename Integers , size_t deg>
using aerobus::asin = typedef taylor<Integers, internal::asin_coeff, deg>
```

$\arcsin(x)$ arc sinus

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.6 asinh

```
template<typename Integers , size_t deg>
using aerobus::asinh = typedef taylor<Integers, internal::asinh_coeff, deg>
```

$\operatorname{arcsinh}(x)$ arc hyperbolic sinus

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.7 atan

```
template<typename Integers , size_t deg>
using aerobus::atan = typedef taylor<Integers, internal::atan_coeff, deg>
```

$\arctan(x)$

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.8 atanh

```
template<typename Integers , size_t deg>
using aerobus::atanh = typedef taylor<Integers, internal::atanh_coeff, deg>
```

$\mathrm{arctanh}(x)$ arc hyperbolic tangent

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.9 bell_t

```
template<typename T , size_t n>
using aerobus::bell_t = typedef typename internal::bell_helper<T, n>::type
```

Bell numbers.

Template Parameters

T	ring type, such as aerobus::i64
n	index

6.1.2.10 bernoulli_t

```
template<typename T , size_t n>
using aerobus::bernoulli_t = typedef typename internal::bernoulli<T, n>::type
```

nth bernoulli number as type in T

Template Parameters

T	Ring type (i64)
n	

6.1.2.11 combination_t

```
template<typename T , size_t k, size_t n>
using aerobus::combination_t = typedef typename internal::combination<T, k, n>::type
```

computes binomial coefficient (k among n) as type

Template Parameters

T	Ring type (i32 for example)

6.1.2.12 cos

```
template<typename Integers , size_t deg>
using aerobus::cos = typedef taylor<Integers, internal::cos_coeff, deg>
```

$\cos(x)$ cosinus

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.13 cosh

```
template<typename Integers , size_t deg>
using aerobus::cosh = typedef taylor<Integers, internal::cosh_coeff, deg>
```

$\cosh(x)$ hyperbolic cosine

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.14 div_t

```
template<typename X , typename Y >
using aerobus::div_t = typedef typename X::enclosing_type::template div_t<X, Y>
```

generic division

Template Parameters

X	a value in a a euclidean domain
Y	a value in same Euclidean domain

6.1.2.15 E_fraction

```
using aerobus::E_fraction = typedef ContinuedFraction<2, 1, 2, 1, 1, 4, 1, 1, 6, 1, 1, 8, 1,
1, 10, 1, 1, 12, 1, 1, 14, 1, 1>
```

approximation of e

6.1.2.16 embed_int_poly_in_fractions_t

```
template<typename v >
using aerobus::embed_int_poly_in_fractions_t = typedef typename Embed< polynomial<typename v↩
::ring_type>, polynomial<FractionField<typename v::ring_type> >>::template type<v>
```

embed a polynomial with integers coefficients into rational coefficients polynomials

Lives in polynomial<FractionField<Ring>>

Template Parameters

Ring	Integers
a	value in polynomial<Ring>

6.1.2.17 exp

```
template<typename Integers , size_t deg>
using aerobus::exp = typedef taylor<Integers, internal::exp_coeff, deg>
```

e^x

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.18 expm1

```
template<typename Integers , size_t deg>
using aerobus::expm1 = typedef typename polynomial<FractionField<Integers> >::template sub_t<
exp<Integers, deg>, typename polynomial<FractionField<Integers> >::one>
```

$e^x - 1$

Template Parameters

T	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.19 factorial_t

```
template<typename T , size_t i>
using aerobus::factorial_t = typedef typename internal::factorial<T, i>::type
```

computes factorial(i), as type

Template Parameters

T	Ring type (e.g. i32)
i	

6.1.2.20 fpq32

```
using aerobus::fpq32 = typedef FractionField<polynomial<q32> >
```

rational fractions with 32 bits rational coefficients rational fractions with rationals coefficients (32 bits numerator and denominator)

6.1.2.21 fpq64

```
using aerobus::fpq64 = typedef FractionField<polynomial<q64> >
```

polynomial with 64 bits rational coefficients

6.1.2.22 FractionField

```
template<typename Ring >
using aerobus::FractionField = typedef typename internal::FractionFieldImpl<Ring>::type
```

Fraction field of an euclidean domain, such as Q for Z.

Template Parameters

Ring	

6.1.2.23 gcd_t

```
template<typename T , typename A , typename B >
using aerobus::gcd_t = typedef typename internal::gcd<T>::template type<A, B>
```

computes the greatest common divisor or A and B

Template Parameters

T	Ring type (must be euclidean domain)

6.1.2.24 geometric_sum

```
template<typename Integers , size_t deg>
using aerobus::geometric_sum = typedef taylor<Integers, internal::geom_coeff, deg>
```

$\frac{1}{1-x}$ zero development of $\frac{1}{1-x}$

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.25 lnp1

```
template<typename Integers , size_t deg>
using aerobus::lnp1 = typedef taylor<Integers, internal::lnp1_coeff, deg>
```

$\ln(1+x)$

Template Parameters

T	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.26 make_frac_polynomial_t

```
template<typename Ring , auto...  xs>
using aerobus::make_frac_polynomial_t = typedef typename polynomial<FractionField<Ring> >↩
::template val< typename FractionField<Ring>::template inject_constant_t<xs>...>
```

make a polynomial with coefficients in FractionField<Ring>

Template Parameters

Ring	integers
...xs	values

6.1.2.27 make_int_polynomial_t

```
template<typename Ring , auto...  xs>
using aerobus::make_int_polynomial_t = typedef typename polynomial<Ring>::template val< typename
Ring::template inject_constant_t<xs>...>
```

make a polynomial with coefficients in Ring

Template Parameters

Ring	integers
...xs	coefficients

6.1.2.28 make_q32_t

```
template<int32_t p, int32_t q>
using aerobus::make_q32_t = typedef typename q32::template simplify_t< typename q32::val<i32::inject_constant
i32::inject_constant_t<q> >>
```

helper type : make a fraction from numerator and denominator

Template Parameters

p	numerator
q	denominator

6.1.2.29 make_q64_t

```
template<int64_t p, int64_t q>
using aerobus::make_q64_t = typedef typename q64::template simplify_t< typename q64::val<i64::inject_constant
i64::inject_constant_t<q> >>
```

helper type : make a fraction from numerator and denominator

Template Parameters

p	numerator
q	denominator

6.1.2.30 makefraction_t

```
template<typename Ring , typename v1 , typename v2 >
using aerobus::makefraction_t = typedef typename FractionField<Ring>::template val<v1, v2>
```

helper type : the rational V1/V2 in the field of fractions of Ring

Template Parameters

Ring	the base ring
v1	value 1 in Ring
v2	value 2 in Ring

6.1.2.31 mul_t

```
template<typename X , typename Y >
using aerobus::mul_t = typedef typename X::enclosing_type::template mul_t<X, Y>
```

generic multiplication

Template Parameters

X	a value in a ring providing mul_t operator
Y	a value in same ring

6.1.2.32 mulfractions_t

```
template<typename Ring , typename v1 , typename v2 >
using aerobus::mulfractions_t = typedef typename FractionField<Ring>::template mul_t<v1, v2>
```

helper type : multiplies two fractions

Template Parameters

Ring	
v1	belongs to FractionField<Ring>
v2	belongs to FranctionField<Ring>

6.1.2.33 pi64

```
using aerobus::pi64 = typedef polynomial<i64>
```

polynomial with 64 bits integers coefficients

6.1.2.34 PI_fraction

```
using aerobus::PI_fraction = typedef ContinuedFraction<3, 7, 15, 1, 292, 1, 1, 1, 2, 1, 3, 1,
14, 2, 1, 1, 2, 2, 2, 2, 1>
```

representation of π as a continued fraction

6.1.2.35 pow_t

```
template<typename T , typename p , size_t n>
using aerobus::pow_t = typedef typename internal::pow<T, p, n>::type
```

p^n (as 'val' type in T)

Template Parameters

T	(some ring type, such as aerobus::i64)
p	must be an instantiation of T::val
n	power

6.1.2.36 pq64

```
using aerobus::pq64 = typedef polynomial<q64>
```

polynomial with 64 bits rationals coefficients

6.1.2.37 q32

```
using aerobus::q32 = typedef FractionField<i32>
```

32 bits rationals rationals with 32 bits numerator and denominator

6.1.2.38 q64

```
using aerobus::q64 = typedef FractionField<i64>
```

64 bits rationals rationals with 64 bits numerator and denominator

6.1.2.39 sin

```
template<typename Integers , size_t deg>
using aerobus::sin = typedef taylor<Integers, internal::sin_coeff, deg>
```

$\sin(x)$

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.40 sinh

```
template<typename Integers , size_t deg>
using aerobus::sinh = typedef taylor<Integers, internal::sh_coeff, deg>
```

$\sinh(x)$

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.41 SQRT2_fraction

```
using aerobus::SQRT2_fraction = typedef ContinuedFraction<1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
2, 2, 2, 2, 2, 2, 2, 2, 2>
```

approximation of $\sqrt{2}$

6.1.2.42 SQRT3_fraction

```
using aerobus::SQRT3_fraction = typedef ContinuedFraction<1, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1,
2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2>
```

approximation of

6.1.2.43 stirling_1_signed_t

```
template<typename T , int n, int k>
using aerobus::stirling_1_signed_t = typedef typename internal::stirling_1_helper<T, n, k>↩
::type
```

Stirling number of first king (signed) – as types.

Template Parameters

T	(ring type, such as aerobus::i64)
n	(integer)
k	(integer)

6.1.2.44 stirling_1_unsigned_t

```
template<typename T , int n, int k>
using aerobus::stirling_1_unsigned_t = typedef abs_t<typename internal::stirling_1_helper<T,
n, k>::type>
```

Stirling number of first king (unsigned) – as types.

Template Parameters

T	(ring type, such as aerobus::i64)
n	(integer)
k	(integer)

6.1.2.45 stirling_2_t

```
template<typename T , int n, int k>
using aerobus::stirling_2_t = typedef typename internal::stirling_2_helper<T, n, k>::type
```

Stirling number of second king – as types.

Template Parameters

T	(ring type, such as aerobus::i64)
n	(integer)
k	(integer)

6.1.2.46 sub_t

```
template<typename X , typename Y >
using aerobus::sub_t = typedef typename X::enclosing_type::template sub_t<X, Y>
```

generic subtraction

Template Parameters

X	a value in a ring providing sub_t operator
Y	a value in same ring

6.1.2.47 tan

```
template<typename Integers , size_t deg>
using aerobus::tan = typedef taylor<Integers, internal::tan_coeff, deg>
```

$\tan(x)$ tangent

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.48 tanh

```
template<typename Integers , size_t deg>
using aerobus::tanh = typedef taylor<Integers, internal::tanh_coeff, deg>
```

$\tanh(x)$ hyperbolic tangent

Template Parameters

Integers	Ring type (for example i64)
deg	taylor approximation degree

6.1.2.49 taylor

```
template<typename T , template< typename, size_t index > typename coeff_at, size_t deg>
using aerobus::taylor = typedef typename internal::make_taylor_impl< T, coeff_at, internal::make_index_sequen
+ 1> >::type
```

Template Parameters

T	Used Ring type (aerobus::i64 for example)
coeff_at	- implementation giving the 'value' (seen as type in FractionField<T>
deg	

6.1.2.50 vadd_t

```
template<typename...  vals>
using aerobus::vadd_t = typedef typename internal::vadd<vals...>::type
```

adds multiple values (v1 + v2 + ... + vn) vals must have same "enclosing_type" and "enclosing_type" must have an add_t binary operator

Template Parameters

...vals	

6.1.2.51 vmul_t

```
template<typename...  vals>
using aerobus::vmul_t = typedef typename internal::vmul<vals...>::type
```

multiplies multiple values (v1 + v2 + ... + vn) vals must have same "enclosing_type" and "enclosing_type" must have an mul_t binary operator

Template Parameters

...vals	

6.1.3 Function Documentation

6.1.3.1 aligned_malloc()

```
template<typename T >
T * aerobus::aligned_malloc (
             size_t count,
             size_t alignment )
```

'portable' aligned allocation of count elements of type T

Template Parameters

T	the type of elements to store

Parameters

count	the number of elements
alignment	boundary

6.1.3.2 field()

```
brief Conway polynomials tparam p characteristic of the aerobus::field (
```

```
prime number )
```

6.1.4 Variable Documentation

6.1.4.1 alternate_v

```
template<typename T , size_t k>
constexpr T::inner_type aerobus::alternate_v = internal::alternate<T, k>::value  [inline],
[constexpr]
```

(-1)^k as value from T

Template Parameters

T	Ring type, aerobus::i64 for example, then result will be an int64_t

6.1.4.2 bernoulli_v

```
template<typename FloatType , typename T , size_t n>
constexpr FloatType aerobus::bernoulli_v = internal::bernoulli<T, n>::template value<Float↩
Type>  [inline], [constexpr]
```

nth bernoulli number as value in FloatType

Template Parameters

FloatType	(double or float for example)
T	(aerobus::i64 for example)
n	

6.1.4.3 combination_v

```
template<typename T , size_t k, size_t n>
constexpr T::inner_type aerobus::combination_v = internal::combination<T, k, n>::value  [inline],
[constexpr]
```

computes binomial coefficients (k among n) as value

Template Parameters

T	(aerobus::i32 for example)
k	
n	

6.1.4.4 factorial_v

```
template<typename T , size_t i>
constexpr T::inner_type aerobus::factorial_v = internal::factorial<T, i>::value  [inline],
[constexpr]
```

computes factorial(i) as value in T

Template Parameters

T	(aerobus::i64 for example)
i	

6.2 aerobus::internal Namespace Reference

internal implementations, subject to breaking changes without notice

Classes

- struct **_FractionField**
- struct **_FractionField**< **Ring, std::enable_if_t**< **Ring::is_euclidean_domain** > >
- struct **_is_prime**
- struct **_is_prime**< **0, i** >
- struct **_is_prime**< **1, i** >
- struct **_is_prime**< **2, i** >
- struct **_is_prime**< **3, i** >
- struct **_is_prime**< **5, i** >
- struct **_is_prime**< **7, i** >
- struct **_is_prime**< **n, i, std::enable_if_t**<**(n !=2 &&n !=3 &&n % 2 !=0 &&n % 3==0)**> >
- struct **_is_prime**< **n, i, std::enable_if_t**<**(n !=2 &&n % 2==0)**> >
- struct **_is_prime**< **n, i, std::enable_if_t**<**(n % i==0 &&n** >**=9 &&n % 3 !=0 &&n % 2 !=0 &&i** ∗**i** > **n)**> >
- struct **_is_prime**< **n, i, std::enable_if_t**<**(n %(i+2) !=0 &&n % i !=0 &&n** >**=9 &&n % 3 !=0 &&n % 2 !=0 &&(i** ∗**i**<**=n))**> >
- struct **_is_prime**< **n, i, std::enable_if_t**<**(n %(i+2)==0 &&n** >**=9 &&n % 3 !=0 &&n % 2 !=0 &&i** ∗**i**<**=n)**> >
- struct **_is_prime**< **n, i, std::enable_if_t**<**(n** >**=9 &&i** ∗**i** > **n)**> >
- struct **AbelHelper**
- struct **AllOneHelper**
- struct **AllOneHelper**< **0, I** >
- struct **alternate**
- struct **alternate**< **T, k, std::enable_if_t**< **k % 2 !=0** > >
- struct **alternate**< **T, k, std::enable_if_t**< **k % 2==0** > >
- struct **asin_coeff**
- struct **asin_coeff_helper**
- struct **asin_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==0** > >
- struct **asin_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==1** > >
- struct **asinh_coeff**
- struct **asinh_coeff_helper**
- struct **asinh_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==0** > >
- struct **asinh_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==1** > >

- struct **atan_coeff**
- struct **atan_coeff_helper**
- struct **atan_coeff_helper< T, i, std::enable_if_t<(i &1)==0 > >**
- struct **atan_coeff_helper< T, i, std::enable_if_t<(i &1)==1 > >**
- struct **atanh_coeff**
- struct **atanh_coeff_helper**
- struct **atanh_coeff_helper< T, i, std::enable_if_t<(i &1)==0 > >**
- struct **atanh_coeff_helper< T, i, std::enable_if_t<(i &1)==1 > >**
- struct **bell_helper**
- struct **bell_helper< T, 0 >**
- struct **bell_helper< T, 1 >**
- struct **bell_helper< T, n, std::enable_if_t<(n > 1)> >**
- struct **bernoulli**
- struct **bernoulli< T, 0 >**
- struct **bernoulli_coeff**
- struct **bernoulli_helper**
- struct **bernoulli_helper< T, accum, m, m >**
- struct **bernstein_helper**
- struct **bernstein_helper< 0, 0, l >**
- struct **bernstein_helper< i, m, l, std::enable_if_t<(m > 0) &&(i > 0) &&(i< m)> >**
- struct **bernstein_helper< i, m, l, std::enable_if_t<(m > 0) &&(i==0)> >**
- struct **bernstein_helper< i, m, l, std::enable_if_t<(m > 0) &&(i==m)> >**
- struct **BesselHelper**
- struct **BesselHelper< 0, l >**
- struct **BesselHelper< 1, l >**
- struct **chebyshev_helper**
- struct **chebyshev_helper< 1, 0, l >**
- struct **chebyshev_helper< 1, 1, l >**
- struct **chebyshev_helper< 2, 0, l >**
- struct **chebyshev_helper< 2, 1, l >**
- struct **combination**
- struct **combination_helper**
- struct **combination_helper< T, 0, n >**
- struct **combination_helper< T, k, n, std::enable_if_t<(n >=0 &&k >(n/2) &&k > 0)> >**
- struct **combination_helper< T, k, n, std::enable_if_t<(n >=0 &&k<=(n/2) &&k > 0)> >**
- struct **cos_coeff**
- struct **cos_coeff_helper**
- struct **cos_coeff_helper< T, i, std::enable_if_t<(i &1)==0 > >**
- struct **cos_coeff_helper< T, i, std::enable_if_t<(i &1)==1 > >**
- struct **cosh_coeff**
- struct **cosh_coeff_helper**
- struct **cosh_coeff_helper< T, i, std::enable_if_t<(i &1)==0 > >**
- struct **cosh_coeff_helper< T, i, std::enable_if_t<(i &1)==1 > >**
- struct **exp_coeff**
- struct **factorial**
- struct **factorial< T, 0 >**
- struct **factorial< T, x, std::enable_if_t<(x > 0)> >**
- struct **FloatLayout**
- struct **FloatLayout< double >**
- struct **FloatLayout< float >**
- struct **FloatLayout< long double >**
- struct **fma_helper**
- struct **fma_helper< double >**
- struct **fma_helper< float >**
- struct **fma_helper< int16_t >**

- struct **fma_helper**< **int32_t** >
- struct **fma_helper**< **int64_t** >
- struct **fma_helper**< **long double** >
- struct **FractionFieldImpl**
- struct **FractionFieldImpl**< **Field, std::enable_if_t**< **Field::is_field** > >
- struct **FractionFieldImpl**< **Ring, std::enable_if_t**<**!Ring::is_field** > >
- struct **gcd**

  greatest common divisor computes the greatest common divisor exposes it in gcd<A, B>::type as long as Ring type is an integral domain
- struct **gcd**< **Ring, std::enable_if_t**< **Ring::is_euclidean_domain** > >
- struct **geom_coeff**
- struct **hermite_helper**
- struct **hermite_helper**< **0, known_polynomials::hermite_kind::physicist, I** >
- struct **hermite_helper**< **0, known_polynomials::hermite_kind::probabilist, I** >
- struct **hermite_helper**< **1, known_polynomials::hermite_kind::physicist, I** >
- struct **hermite_helper**< **1, known_polynomials::hermite_kind::probabilist, I** >
- struct **hermite_helper**< **deg, known_polynomials::hermite_kind::physicist, I** >
- struct **hermite_helper**< **deg, known_polynomials::hermite_kind::probabilist, I** >
- struct **insert_h**
- struct **is_instantiation_of**
- struct **is_instantiation_of**< **TT, TT**< **Ts...** > >
- struct **laguerre_helper**
- struct **laguerre_helper**< **0, I** >
- struct **laguerre_helper**< **1, I** >
- struct **legendre_helper**
- struct **legendre_helper**< **0, I** >
- struct **legendre_helper**< **1, I** >
- struct **lnp1_coeff**
- struct **lnp1_coeff**< **T, 0** >
- struct **make_taylor_impl**
- struct **make_taylor_impl**< **T, coeff_at, std::integer_sequence**< **size_t, Is...** > >
- struct **pop_front_h**
- struct **pow**
- struct **pow**< **T, p, n, std::enable_if_t**< **n==0** > >
- struct **pow**< **T, p, n, std::enable_if_t**<**(n % 2==1)**> >
- struct **pow**< **T, p, n, std::enable_if_t**<**(n > 0 &&n % 2==0)**> >
- struct **pow_scalar**
- struct **remove_h**
- struct **sh_coeff**
- struct **sh_coeff_helper**
- struct **sh_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==0** > >
- struct **sh_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==1** > >
- struct **sin_coeff**
- struct **sin_coeff_helper**
- struct **sin_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==0** > >
- struct **sin_coeff_helper**< **T, i, std::enable_if_t**<**(i &1)==1** > >
- struct **split_h**
- struct **split_h**< **0, L1, L2** >
- struct **staticcast**
- struct **stirling_1_helper**
- struct **stirling_1_helper**< **T, 0, 0** >
- struct **stirling_1_helper**< **T, 0, n, std::enable_if_t**<**(n > 0)**> >
- struct **stirling_1_helper**< **T, n, 0, std::enable_if_t**<**(n > 0)**> >
- struct **stirling_1_helper**< **T, n, k, std::enable_if_t**<**(k > 0) &&(n > 0)**> >

- struct **stirling_2_helper**
- struct **stirling_2_helper< T, 0, n, std::enable_if_t<(n > 0)> >**
- struct **stirling_2_helper< T, n, 0, std::enable_if_t<(n > 0)> >**
- struct **stirling_2_helper< T, n, k, std::enable_if_t<(k > 0) &&(n > 0) &&(k< n)> >**
- struct **stirling_2_helper< T, n, n, std::enable_if_t<(n >=0)> >**
- struct **tan_coeff**
- struct **tan_coeff_helper**
- struct **tan_coeff_helper< T, i, std::enable_if_t<(i % 2) !=0 > >**
- struct **tan_coeff_helper< T, i, std::enable_if_t<(i % 2)==0 > >**
- struct **tanh_coeff**
- struct **tanh_coeff_helper**
- struct **tanh_coeff_helper< T, i, std::enable_if_t<(i % 2) !=0 > >**
- struct **tanh_coeff_helper< T, i, std::enable_if_t<(i % 2)==0 > >**
- struct **touchard_coeff**
- struct **type_at**
- struct **type_at< 0, T, Ts... >**
- struct **vadd**
- struct **vadd< v1 >**
- struct **vadd< v1, vals... >**
- struct **vmul**
- struct **vmul< v1 >**
- struct **vmul< v1, vals... >**

Typedefs

- template<size_t i, typename... Ts>
  using type_at_t = typename type_at< i, Ts... >::type
- template<std::size_t N>
  using make_index_sequence_reverse = decltype(index_sequence_reverse(std::make_index_sequence< N >{}))

Functions

- template<std::size_t... Is>
  constexpr auto index_sequence_reverse (std::index_sequence< Is... > const &) -> decltype(std::index_↩ sequence< sizeof...(Is) - 1U - Is... >{})

Variables

- template<template< typename... > typename TT, typename T >
  constexpr bool is_instantiation_of_v = is_instantiation_of<TT, T>::value

6.2.1 Detailed Description

internal implementations, subject to breaking changes without notice

6.2.2 Typedef Documentation

6.2.2.1 make_index_sequence_reverse

```
template<std::size_t N>
using aerobus::internal::make_index_sequence_reverse = typedef decltype(index_sequence_reverse(std↩
::make_index_sequence<N>{}))
```

6.2.2.2 type_at_t

```
template<size_t i, typename...  Ts>
using aerobus::internal::type_at_t = typedef typename type_at<i, Ts...>::type
```

6.2.3 Function Documentation

6.2.3.1 index_sequence_reverse()

```
template<std::size_t...  Is>
constexpr auto aerobus::internal::index_sequence_reverse (
            std::index_sequence< Is...  > const &  ) -> decltype(std::index_sequence< sizeof...(Is)
- 1U - Is...  >{})  [constexpr]
```

6.2.4 Variable Documentation

6.2.4.1 is_instantiation_of_v

```
template<template< typename...  > typename TT, typename T >
constexpr bool aerobus::internal::is_instantiation_of_v = is_instantiation_of<TT, T>::value
[inline], [constexpr]
```

6.3 aerobus::known_polynomials Namespace Reference

families of well known polynomials such as Hermite or Bernstein

Enumerations

- enum hermite_kind { probabilist , physicist }

6.3.1 Detailed Description

families of well known polynomials such as Hermite or Bernstein

6.3.2 Enumeration Type Documentation

6.3.2.1 hermite_kind

```
enum aerobus::known_polynomials::hermite_kind
```

Enumerator

probabilist	
physicist	

Chapter 7

Concept Documentation

7.1 aerobus::IsEuclideanDomain Concept Reference

Concept to express R is an euclidean domain.

`#include <aerobus.h>`

7.1.1 Concept definition

```
template<typename R>
concept aerobus::IsEuclideanDomain =  IsRing<R> && requires {
        typename R::template div_t<typename R::one, typename R::one>;
        typename R::template mod_t<typename R::one, typename R::one>;
        typename R::template gcd_t<typename R::one, typename R::one>;
        typename R::template eq_t<typename R::one, typename R::one>;
        typename R::template pos_t<typename R::one>;

        R::template pos_v<typename R::one> == true;

        R::is_euclidean_domain == true;
    }
```

7.1.2 Detailed Description

Concept to express R is an euclidean domain.

7.2 aerobus::IsField Concept Reference

Concept to express R is a field.

`#include <aerobus.h>`

7.2.1 Concept definition

```
template<typename R>
concept aerobus::IsField =  IsEuclideanDomain<R> && requires {
        R::is_field == true;
    }
```

7.2.2 Detailed Description

Concept to express R is a field.

7.3 aerobus::IsRing Concept Reference

Concept to express R is a Ring.

`#include <aerobus.h>`

7.3.1 Concept definition

```
template<typename R>
concept aerobus::IsRing =  requires {
        typename R::one;
        typename R::zero;
        typename R::template add_t<typename R::one, typename R::one>;
        typename R::template sub_t<typename R::one, typename R::one>;
        typename R::template mul_t<typename R::one, typename R::one>;
    }
```

7.3.2 Detailed Description

Concept to express R is a Ring.

Chapter 8

Class Documentation

8.1 aerobus::polynomial< Ring >::val< coeffN >::coeff_at< index, E > Struct Template Reference

`#include <aerobus.h>`

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.2 aerobus::polynomial< Ring >::val< coeffN >::coeff_at< index, std::enable_if_t<(index< 0||index > 0)> > Struct Template Reference

`#include <aerobus.h>`

Public Types

- using type = typename Ring::zero

8.2.1 Member Typedef Documentation

8.2.1.1 type

```
template<typename Ring >
template<typename coeffN >
template<size_t index>
using aerobus::polynomial< Ring >::val< coeffN >::coeff_at< index, std::enable_if_t<(index<
0||index > 0)> >::type = typename Ring::zero
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.3 aerobus::polynomial< Ring >::val< coeffN >::coeff_at< index, std::enable_if_t<(index==0)> > Struct Template Reference

`#include <aerobus.h>`

Public Types

- using type = aN

8.3.1 Member Typedef Documentation

8.3.1.1 type

```
template<typename Ring >
template<typename coeffN >
template<size_t index>
using aerobus::polynomial< Ring >::val< coeffN >::coeff_at< index, std::enable_if_t<(index==0)>
>::type = aN
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.4 aerobus::ContinuedFraction< values > Struct Template Reference

represents a continued fraction a0 + $\frac{1}{a_1+\frac{1}{a_2+\dots}}$

`#include <aerobus.h>`

8.4.1 Detailed Description

template<int64_t... values>
struct aerobus::ContinuedFraction< values >

represents a continued fraction a0 + $\frac{1}{a_1+\frac{1}{a_2+\dots}}$

Template Parameters

...values	are int64_t

Examples

examples/continued_fractions.cpp.

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.5 aerobus::ContinuedFraction< a0 > Struct Template Reference

Specialization for only one coefficient, technically just 'a0'.

`#include <aerobus.h>`

Public Types

- using type = typename q64::template inject_constant_t< a0 >
  represented value as aerobus::q64

Static Public Attributes

- static constexpr double val = static_cast<double>(a0)
  represented value as double

8.5.1 Detailed Description

template<int64_t a0>
struct aerobus::ContinuedFraction< a0 >

Specialization for only one coefficient, technically just 'a0'.

Template Parameters

a0	an integer int64_t

8.5.2 Member Typedef Documentation

8.5.2.1 type

```
template<int64_t a0>
using aerobus::ContinuedFraction< a0 >::type = typename q64::template inject_constant_t<a0>
```

represented value as aerobus::q64

8.5.3 Member Data Documentation

8.5.3.1 val

```
template<int64_t a0>
constexpr double aerobus::ContinuedFraction< a0 >::val = static_cast<double>(a0)  [static],
[constexpr]
```

represented value as double

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.6 aerobus::ContinuedFraction< a0, rest... > Struct Template Reference

specialization for multiple coefficients (strictly more than one)

```
#include <aerobus.h>
```

Public Types

- using type = q64::template add_t< typename q64::template inject_constant_t< a0 >, typename q64↩ ::template div_t< typename q64::one, typename ContinuedFraction< rest... >::type > >

  represented value as aerobus::q64

Static Public Attributes

- static constexpr double val = type::template get<double>()

  reprensented value as double

8.6.1 Detailed Description

template<int64_t a0, int64_t... rest>
struct aerobus::ContinuedFraction< a0, rest... >

specialization for multiple coefficients (strictly more than one)

Template Parameters

a0	integer (int64_t)
...rest	integers (int64_t)

8.6.2 Member Typedef Documentation

8.6.2.1 type

```
template<int64_t a0, int64_t...  rest>
using aerobus::ContinuedFraction< a0, rest...  >::type = q64::template add_t< typename q64↩
::template inject_constant_t<a0>, typename q64::template div_t< typename q64::one, typename
ContinuedFraction<rest...>::type > >
```

represented value as aerobus::q64

8.6.3 Member Data Documentation

8.6.3.1 val

```
template<int64_t a0, int64_t...  rest>
constexpr double aerobus::ContinuedFraction< a0, rest...  >::val = type::template get<double>()
[static], [constexpr]
```

reprensented value as double

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.7 aerobus::ConwayPolynomial Struct Reference

```
#include <aerobus.h>
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.8 aerobus::polynomial< Ring >::compensated_horner< arithmeticType, P >::EFTHorner< index, ghost > Struct Template Reference

```
#include <aerobus.h>
```

Static Public Member Functions

- static INLINED void func (arithmeticType x, arithmeticType *pi, arithmeticType *sigma, arithmeticType *r)

8.8.1 Member Function Documentation

8.8.1.1 func()

```
template<typename Ring >
template<typename arithmeticType , typename P >
template<int64_t index, int ghost>
static INLINED void aerobus::polynomial< Ring >::compensated_horner< arithmeticType, P >::↩
EFTHorner< index, ghost >::func (
             arithmeticType x,
             arithmeticType * pi,
             arithmeticType * sigma,
             arithmeticType * r )  [inline], [static]
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.9 aerobus::polynomial< Ring >::compensated_horner< arithmeticType, P >::EFTHorner<-1, ghost > Struct Template Reference

```
#include <aerobus.h>
```

Static Public Member Functions

- static INLINED DEVICE void func (arithmeticType x, arithmeticType *pi, arithmeticType *sigma, arithmetic↩ Type *r)

8.9.1 Member Function Documentation

8.9.1.1 func()

```
template<typename Ring >
template<typename arithmeticType , typename P >
template<int ghost>
static INLINED DEVICE void aerobus::polynomial< Ring >::compensated_horner< arithmeticType, P
>::EFTHorner<-1, ghost >::func (
             arithmeticType x,
             arithmeticType * pi,
             arithmeticType * sigma,
             arithmeticType * r )  [inline], [static]
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.10 aerobus::Embed< Small, Large, E > Struct Template Reference

embedding - struct forward declaration

8.10.1 Detailed Description

template<typename Small, typename Large, typename E = void>
struct aerobus::Embed< Small, Large, E >

embedding - struct forward declaration

Template Parameters

Small	a ring which can be embedded in Large
Large	a ring in which Small can be embedded
E	some default type (unused – implementation related)

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.11 aerobus::Embed< i32, i64 > Struct Reference

embeds i32 into i64

```
#include <aerobus.h>
```

Public Types

- template<typename val >
  using type = i64::val< static_cast< int64_t >(val::v)>
  the i64 representation of val

8.11.1 Detailed Description

embeds i32 into i64

8.11.2 Member Typedef Documentation

8.11.2.1 type

```
template<typename val >
using aerobus::Embed< i32, i64 >::type = i64::val<static_cast<int64_t>(val::v)>
```

the i64 representation of val

Template Parameters

val	a value in i32

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.12 aerobus::Embed< polynomial< Small >, polynomial< Large > > Struct Template Reference

embeds polynomial<Small> into polynomial<Large>

`#include <aerobus.h>`

Public Types

- template<typename v >
  using type = typename at_low< v, typename internal::make_index_sequence_reverse< v::degree+1 > >↩
  ::type

  the polynomial<Large> reprensentation of v

8.12.1 Detailed Description

template<typename Small, typename Large>
struct aerobus::Embed< polynomial< Small >, polynomial< Large > >

embeds polynomial<Small> into polynomial<Large>

Template Parameters

Small	a rings which can be embedded in Large
Large	a ring in which Small can be embedded

8.12.2 Member Typedef Documentation

8.12.2.1 type

```
template<typename Small , typename Large >
template<typename v >
using aerobus::Embed< polynomial< Small >, polynomial< Large > >::type = typename at_low<v,
typename internal::make_index_sequence_reverse<v::degree + 1> >::type
```

the polynomial<Large> reprensentation of v

Template Parameters

v	a value in polynomial<Small>

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.13 aerobus::Embed< q32, q64 > Struct Reference

embeds q32 into q64

`#include <aerobus.h>`

Public Types

- template<typename v >
  using type = make_q64_t< static_cast< int64_t >(v::x::v), static_cast< int64_t >(v::y::v)>
  q64 representation of v

8.13.1 Detailed Description

embeds q32 into q64

8.13.2 Member Typedef Documentation

8.13.2.1 type

```
template<typename v >
using aerobus::Embed< q32, q64 >::type = make_q64_t<static_cast<int64_t>(v::x::v), static_↩
cast<int64_t>(v::y::v)>
```

q64 representation of v

Template Parameters

v	a value in q32

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.14 aerobus::Embed< Quotient< Ring, X >, Ring > Struct Template Reference

embeds Quotient<Ring, X> into Ring

`#include <aerobus.h>`

Public Types

- template<typename val >
  using type = typename val::raw_t

  Ring reprensentation of val.

8.14.1 Detailed Description

template<typename Ring, typename X>
struct aerobus::Embed< Quotient< Ring, X >, Ring >

embeds Quotient<Ring, X> into Ring

Template Parameters

Ring	a Euclidean ring
X	a value in Ring

8.14.2 Member Typedef Documentation

8.14.2.1 type

```
template<typename Ring , typename X >
template<typename val >
using aerobus::Embed< Quotient< Ring, X >, Ring >::type = typename val::raw_t
```

Ring reprensentation of val.

Template Parameters

val	a value in Quotient<Ring, X>

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.15 aerobus::Embed< Ring, FractionField< Ring > > Struct Template Reference

embeds values from Ring to its field of fractions

```
#include <aerobus.h>
```

Public Types

- template<typename v >
  using type = typename FractionField< Ring >::template val< v, typename Ring::one >
  FractionField<Ring> reprensentation of v.

8.15.1 Detailed Description

template<typename Ring>
struct aerobus::Embed< Ring, FractionField< Ring > >

embeds values from Ring to its field of fractions

Template Parameters

Ring	an integers ring, such as i32

8.15.2 Member Typedef Documentation

8.15.2.1 type

```
template<typename Ring >
template<typename v >
using aerobus::Embed< Ring, FractionField< Ring > >::type = typename FractionField<Ring>↩
::template val<v, typename Ring::one>
```

FractionField<Ring> reprensentation of v.

Template Parameters

v	a Ring value

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.16 aerobus::Embed< zpz< x >, i32 > Struct Template Reference

embeds zpz values into i32

```
#include <aerobus.h>
```

Public Types

- template<typename val >
  using type = i32::val< val::v >
  the i32 reprensentation of val

8.16.1 Detailed Description

template<int32_t x>
struct aerobus::Embed< zpz< x >, i32 >

embeds zpz values into i32

Template Parameters

x	an integer

8.16.2 Member Typedef Documentation

8.16.2.1 type

```
template<int32_t x>
template<typename val >
using aerobus::Embed< zpz< x >, i32 >::type = i32::val<val::v>
```

the i32 reprensentation of val

Template Parameters

val	a value in zpz<x>

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.17 aerobus::polynomial< Ring >::horner_reduction_t< P > Struct Template Reference

Used to evaluate polynomials over a value in Ring.

```
#include <aerobus.h>
```

Classes

- struct inner
- struct inner< stop, stop >

8.17.1 Detailed Description

template<typename Ring>
template<typename P>
struct aerobus::polynomial< Ring >::horner_reduction_t< P >

Used to evaluate polynomials over a value in Ring.

Template Parameters

P	a value in polynomial<Ring>

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.18 aerobus::i32 Struct Reference

32 bits signed integers, seen as a algebraic ring with related operations

```
#include <aerobus.h>
```

Classes

- struct val
  values in i32, again represented as types

Public Types

- using inner_type = int32_t
- using zero = val< 0 >
  constant zero
- using one = val< 1 >
  constant one
- template<auto x>
  using inject_constant_t = val< static_cast< int32_t >(x)>
  inject a native constant
- template<typename v >
  using inject_ring_t = v
- template<typename v1 , typename v2 >
  using add_t = typename add< v1, v2 >::type
  addition operator yields v1 + v2

- template<typename v1 , typename v2 >
  using sub_t = typename sub< v1, v2 >::type

  substraction operator yields v1 - v2
- template<typename v1 , typename v2 >
  using mul_t = typename mul< v1, v2 >::type

  *multiplication operator yields v1 * v2*
- template<typename v1 , typename v2 >
  using div_t = typename div< v1, v2 >::type

  division operator yields v1 / v2
- template<typename v1 , typename v2 >
  using mod_t = typename remainder< v1, v2 >::type

  modulus operator yields v1 % v2
- template<typename v1 , typename v2 >
  using gt_t = typename gt< v1, v2 >::type

  strictly greater operator (v1 > v2) yields v1 > v2
- template<typename v1 , typename v2 >
  using lt_t = typename lt< v1, v2 >::type

  strict less operator (v1 < v2) yields v1 < v2
- template<typename v1 , typename v2 >
  using eq_t = typename eq< v1, v2 >::type

  equality operator (type) yields v1 == v2 as std::integral_constant<bool>
- template<typename v1 , typename v2 >
  using gcd_t = gcd_t< i32, v1, v2 >

  greatest common divisor yields GCD(v1, v2)
- template<typename v >
  using pos_t = typename pos< v >::type

  positivity operator yields v > 0 as std::true_type or std::false_type

Static Public Attributes

- static constexpr bool is_field = false

  integers are not a field
- static constexpr bool is_euclidean_domain = true

  integers are an euclidean domain
- template<typename v1 , typename v2 >
  static constexpr bool eq_v = eq_t<v1, v2>::value

  equality operator (boolean value)
- template<typename v >
  static constexpr bool pos_v = pos_t<v>::value

  positivity (boolean value) yields v > 0 as boolean value

8.18.1 Detailed Description

32 bits signed integers, seen as a algebraic ring with related operations

Examples

examples/compensated_horner.cpp.

8.18.2 Member Typedef Documentation

8.18.2.1 add_t

```
template<typename v1 , typename v2 >
using aerobus::i32::add_t = typename add<v1, v2>::type
```

addition operator yields v1 + v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.2 div_t

```
template<typename v1 , typename v2 >
using aerobus::i32::div_t = typename div<v1, v2>::type
```

division operator yields v1 / v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.3 eq_t

```
template<typename v1 , typename v2 >
using aerobus::i32::eq_t = typename eq<v1, v2>::type
```

equality operator (type) yields v1 == v2 as std::integral_constant<bool>

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.4 gcd_t

```
template<typename v1 , typename v2 >
using aerobus::i32::gcd_t = gcd_t<i32, v1, v2>
```

greatest common divisor yields GCD(v1, v2)

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.5 gt_t

```
template<typename v1 , typename v2 >
using aerobus::i32::gt_t = typename gt<v1, v2>::type
```

strictly greater operator (v1 $>$ v2) yields v1 $>$ v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.6 inject_constant_t

```
template<auto x>
using aerobus::i32::inject_constant_t = val<static_cast<int32_t>(x)>
```

inject a native constant

Template Parameters

x	

8.18.2.7 inject_ring_t

```
template<typename v >
using aerobus::i32::inject_ring_t = v
```

8.18.2.8 inner_type

```
using aerobus::i32::inner_type = int32_t
```

8.18.2.9 lt_t

```
template<typename v1 , typename v2 >
using aerobus::i32::lt_t = typename lt<v1, v2>::type
```

strict less operator (v1 $<$ v2) yields v1 $<$ v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.10 mod_t

```
template<typename v1 , typename v2 >
using aerobus::i32::mod_t = typename remainder<v1, v2>::type
```

modulus operator yields v1 % v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.11 mul_t

```
template<typename v1 , typename v2 >
using aerobus::i32::mul_t = typename mul<v1, v2>::type
```

multiplication operator yields v1 $*$ v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.12 one

```
using aerobus::i32::one = val<1>
```

constant one

8.18.2.13 pos_t

```
template<typename v >
using aerobus::i32::pos_t = typename pos<v>::type
```

positivity operator yields v $>$ 0 as std::true_type or std::false_type

Template Parameters

v	a value in i32

8.18.2.14 sub_t

```
template<typename v1 , typename v2 >
using aerobus::i32::sub_t = typename sub<v1, v2>::type
```

substraction operator yields v1 - v2

Template Parameters

v1	a value in i32
v2	a value in i32

8.18.2.15 zero

```
using aerobus::i32::zero = val<0>
```

constant zero

8.18.3 Member Data Documentation

8.18.3.1 eq_v

```
template<typename v1 , typename v2 >
constexpr bool aerobus::i32::eq_v = eq_t<v1, v2>::value  [static], [constexpr]
```

equality operator (boolean value)

Template Parameters

v1	
v2	

8.18.3.2 is_euclidean_domain

```
constexpr bool aerobus::i32::is_euclidean_domain = true  [static], [constexpr]
```

integers are an euclidean domain

8.18.3.3 is_field

```
constexpr bool aerobus::i32::is_field = false  [static], [constexpr]
```

integers are not a field

8.18.3.4 pos_v

```
template<typename v >
constexpr bool aerobus::i32::pos_v = pos_t<v>::value  [static], [constexpr]
```

positivity (boolean value) yields v $>$ 0 as boolean value

Template Parameters

v	a value in i32

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.19 aerobus::i64 Struct Reference

64 bits signed integers, seen as a algebraic ring with related operations

`#include <aerobus.h>`

Classes

- struct val
  values in i64

Public Types

- using inner_type = int64_t
  type of represented values
- template<auto x>
  using inject_constant_t = val< static_cast< int64_t >(x)>
  injects constant as an i64 value
- template<typename v >
  using inject_ring_t = v
  injects a value used for internal consistency and quotient rings implementations for example i64::inject_ring_t<i64::val<1>> -> i64::val<1>
- using zero = val< 0 >
  constant zero
- using one = val< 1 >
  constant one
- template<typename v1 , typename v2 >
  using add_t = typename add< v1, v2 >::type
  addition operator
- template<typename v1 , typename v2 >
  using sub_t = typename sub< v1, v2 >::type
  substraction operator
- template<typename v1 , typename v2 >
  using mul_t = typename mul< v1, v2 >::type
  multiplication operator
- template<typename v1 , typename v2 >
  using div_t = typename div< v1, v2 >::type
  division operator integer division
- template<typename v1 , typename v2 >
  using mod_t = typename remainder< v1, v2 >::type

modulus operator

- template<typename v1 , typename v2 >
  using gt_t = typename gt< v1, v2 >::type

  strictly greater operator yields v1 > v2 as std::true_type or std::false_type
- template<typename v1 , typename v2 >
  using lt_t = typename lt< v1, v2 >::type

  strict less operator yields v1 < v2 as std::true_type or std::false_type
- template<typename v1 , typename v2 >
  using eq_t = typename eq< v1, v2 >::type

  equality operator yields v1 == v2 as std::true_type or std::false_type
- template<typename v1 , typename v2 >
  using gcd_t = gcd_t< i64, v1, v2 >

  greatest common divisor yields GCD(v1, v2) as instanciation of i64::val
- template<typename v >
  using pos_t = typename pos< v >::type

  is v posititive yields v > 0 as std::true_type or std::false_type

Static Public Attributes

- static constexpr bool is_field = false

  integers are not a field
- static constexpr bool is_euclidean_domain = true

  integers are an euclidean domain
- template<typename v1 , typename v2 >
  static constexpr bool gt_v = gt_t<v1, v2>::value

  strictly greater operator yields v1 > v2 as boolean value
- template<typename v1 , typename v2 >
  static constexpr bool lt_v = lt_t<v1, v2>::value

  strictly smaller operator yields v1 < v2 as boolean value
- template<typename v1 , typename v2 >
  static constexpr bool eq_v = eq_t<v1, v2>::value

  equality operator yields v1 == v2 as boolean value
- template<typename v >
  static constexpr bool pos_v = pos_t<v>::value

  positivity yields v > 0 as boolean value

8.19.1 Detailed Description

64 bits signed integers, seen as a algebraic ring with related operations

8.19.2 Member Typedef Documentation

8.19.2.1 add_t

```
template<typename v1 , typename v2 >
using aerobus::i64::add_t = typename add<v1, v2>::type
```

addition operator

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.2 div_t

```
template<typename v1 , typename v2 >
using aerobus::i64::div_t = typename div<v1, v2>::type
```

division operator integer division

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.3 eq_t

```
template<typename v1 , typename v2 >
using aerobus::i64::eq_t = typename eq<v1, v2>::type
```

equality operator yields v1 == v2 as std::true_type or std::false_type

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.4 gcd_t

```
template<typename v1 , typename v2 >
using aerobus::i64::gcd_t = gcd_t<i64, v1, v2>
```

greatest common divisor yields GCD(v1, v2) as instanciation of i64::val

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.5 gt_t

```
template<typename v1 , typename v2 >
using aerobus::i64::gt_t = typename gt<v1, v2>::type
```

strictly greater operator yields v1 > v2 as std::true_type or std::false_type

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.6 inject_constant_t

```
template<auto x>
using aerobus::i64::inject_constant_t = val<static_cast<int64_t>(x)>
```

injects constant as an i64 value

Template Parameters

x	

8.19.2.7 inject_ring_t

```
template<typename v >
using aerobus::i64::inject_ring_t = v
```

injects a value used for internal consistency and quotient rings implementations for example i64::inject_ring_t<i64::val<1>> -> i64::val<1>

Template Parameters

v	a value in i64

8.19.2.8 inner_type

```
using aerobus::i64::inner_type = int64_t
```

type of represented values

8.19.2.9 lt_t

```
template<typename v1 , typename v2 >
using aerobus::i64::lt_t = typename lt<v1, v2>::type
```

strict less operator yields v1 < v2 as std::true_type or std::false_type

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.10 mod_t

```
template<typename v1 , typename v2 >
using aerobus::i64::mod_t = typename remainder<v1, v2>::type
```

modulus operator

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.11 mul_t

```
template<typename v1 , typename v2 >
using aerobus::i64::mul_t = typename mul<v1, v2>::type
```

multiplication operator

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.12 one

```
using aerobus::i64::one = val<1>
```

constant one

8.19.2.13 pos_t

```
template<typename v >
using aerobus::i64::pos_t = typename pos<v>::type
```

is v posititive yields v $>$ 0 as std::true_type or std::false_type

Template Parameters

v1	: an element of aerobus::i64::val

8.19.2.14 sub_t

```
template<typename v1 , typename v2 >
using aerobus::i64::sub_t = typename sub<v1, v2>::type
```

substraction operator

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.2.15 zero

```
using aerobus::i64::zero = val<0>
```

constant zero

8.19.3 Member Data Documentation

8.19.3.1 eq_v

```
template<typename v1 , typename v2 >
constexpr bool aerobus::i64::eq_v = eq_t<v1, v2>::value  [static], [constexpr]
```

equality operator yields v1 == v2 as boolean value

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.3.2 gt_v

```
template<typename v1 , typename v2 >
constexpr bool aerobus::i64::gt_v = gt_t<v1, v2>::value  [static], [constexpr]
```

strictly greater operator yields v1 $>$ v2 as boolean value

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.3.3 is_euclidean_domain

```
constexpr bool aerobus::i64::is_euclidean_domain = true  [static], [constexpr]
```

integers are an euclidean domain

8.19.3.4 is_field

```
constexpr bool aerobus::i64::is_field = false  [static], [constexpr]
```

integers are not a field

8.19.3.5 lt_v

```
template<typename v1 , typename v2 >
constexpr bool aerobus::i64::lt_v = lt_t<v1, v2>::value  [static], [constexpr]
```

strictly smaller operator yields v1 < v2 as boolean value

Template Parameters

v1	: an element of aerobus::i64::val
v2	: an element of aerobus::i64::val

8.19.3.6 pos_v

```
template<typename v >
constexpr bool aerobus::i64::pos_v = pos_t<v>::value  [static], [constexpr]
```

positivity yields v > 0 as boolean value

Template Parameters

v	: an element of aerobus::i64::val

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.20 aerobus::polynomial< Ring >::horner_reduction_t< P >::inner< index, stop > Struct Template Reference

```
#include <aerobus.h>
```

Public Types

- template<typename accum , typename x >
  using type = typename horner_reduction_t< P >::template inner< index+1, stop > ::template type< typename Ring::template add_t< typename Ring::template mul_t< x, accum >, typename P::template coeff_at_t< P::degree - index > >, x >

8.20.1 Member Typedef Documentation

8.20.1.1 type

```
template<typename Ring >
template<typename P >
template<size_t index, size_t stop>
template<typename accum , typename x >
using aerobus::polynomial< Ring >::horner_reduction_t< P >::inner< index, stop >::type =
typename horner_reduction_t<P>::template inner<index + 1, stop> ::template type< typename
Ring::template add_t< typename Ring::template mul_t<x, accum>, typename P::template coeff_↩
at_t<P::degree - index> >, x>
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.21 aerobus::polynomial< Ring >::horner_reduction_t< P >::inner< stop, stop > Struct Template Reference

```
#include <aerobus.h>
```

Public Types

- template<typename accum , typename x >
  using type = accum

8.21.1 Member Typedef Documentation

8.21.1.1 type

```
template<typename Ring >
template<typename P >
template<size_t stop>
template<typename accum , typename x >
using aerobus::polynomial< Ring >::horner_reduction_t< P >::inner< stop, stop >::type =
accum
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.22 aerobus::is_prime< n > Struct Template Reference

checks if n is prime

```
#include <aerobus.h>
```

Static Public Attributes

- static constexpr bool value = internal::_is_prime<n, 5>::value

  true iff n is prime

8.22.1 Detailed Description

template<size_t n>
struct aerobus::is_prime< n >

checks if n is prime

Template Parameters

n	

8.22.2 Member Data Documentation

8.22.2.1 value

```
template<size_t n>
constexpr bool aerobus::is_prime< n >::value = internal::_is_prime<n, 5>::value  [static],
[constexpr]
```

true iff n is prime

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.23 aerobus::polynomial< Ring > Struct Template Reference

```
#include <aerobus.h>
```

Classes

- struct horner_reduction_t

  Used to evaluate polynomials over a value in Ring.
- struct val

  values (seen as types) in polynomial ring
- struct val< coeffN >

  specialization for constants

Public Types

- using zero = val< typename Ring::zero >

  constant zero
- using one = val< typename Ring::one >

  constant one
- using X = val< typename Ring::one, typename Ring::zero >

  generator
- template<typename P >
  using simplify_t = typename simplify< P >::type

  simplifies a polynomial (recursively deletes highest degree if zero, do nothing otherwise)
- template<typename v1 , typename v2 >
  using add_t = typename add< v1, v2 >::type

  adds two polynomials
- template<typename v1 , typename v2 >
  using sub_t = typename sub< v1, v2 >::type

  substraction of two polynomials
- template<typename v1 , typename v2 >
  using mul_t = typename mul< v1, v2 >::type

  multiplication of two polynomials
- template<typename v1 , typename v2 >
  using eq_t = typename eq_helper< v1, v2 >::type

  equality operator
- template<typename v1 , typename v2 >
  using lt_t = typename lt_helper< v1, v2 >::type

  strict less operator
- template<typename v1 , typename v2 >
  using gt_t = typename gt_helper< v1, v2 >::type

  strict greater operator
- template<typename v1 , typename v2 >
  using div_t = typename div< v1, v2 >::q_type

  division operator
- template<typename v1 , typename v2 >
  using mod_t = typename div_helper< v1, v2, zero, v1 >::mod_type

  modulo operator
- template<typename coeff , size_t deg>
  using monomial_t = typename monomial< coeff, deg >::type

  monomial : coeff X^deg
- template<typename v >
  using derive_t = typename derive_helper< v >::type

  derivation operator
- template<typename v >
  using pos_t = typename Ring::template pos_t< typename v::aN >

  checks for positivity (an > 0)
- template<typename v1 , typename v2 >
  using gcd_t = std::conditional_t< Ring::is_euclidean_domain, typename make_unit< gcd_t< polynomial< Ring >, v1, v2 > >::type, void >

  greatest common divisor of two polynomials
- template<auto x>
  using inject_constant_t = val< typename Ring::template inject_constant_t< x > >

  makes the constant (native type) polynomial a_0
- template<typename v >
  using inject_ring_t = val< v >

  makes the constant (ring type) polynomial a_0

Static Public Attributes

- static constexpr bool is_field = false
- static constexpr bool is_euclidean_domain = Ring::is_euclidean_domain
- template<typename v >
  static constexpr bool pos_v = pos_t<v>::value

  positivity operator

8.23.1 Detailed Description

template<typename Ring>
requires IsEuclideanDomain<Ring>
struct aerobus::polynomial< Ring >

polynomial with coefficients in Ring Ring must be an integral domain

Examples

examples/compensated_horner.cpp, examples/make_polynomial.cpp, and examples/modular_arithmetic.cpp.

8.23.2 Member Typedef Documentation

8.23.2.1 add_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::add_t = typename add<v1, v2>::type
```

adds two polynomials

Template Parameters

v1	
v2	

8.23.2.2 derive_t

```
template<typename Ring >
template<typename v >
using aerobus::polynomial< Ring >::derive_t = typename derive_helper<v>::type
```

derivation operator

Template Parameters

v	

8.23.2.3 div_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::div_t = typename div<v1, v2>::q_type
```

division operator

Template Parameters

v1	
v2	

8.23.2.4 eq_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::eq_t = typename eq_helper<v1, v2>::type
```

equality operator

Template Parameters

v1	
v2	

8.23.2.5 gcd_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::gcd_t = std::conditional_t< Ring::is_euclidean_domain,
typename make_unit<gcd_t<polynomial<Ring>, v1, v2> >::type, void>
```

greatest common divisor of two polynomials

Template Parameters

v1	
v2	

8.23.2.6 gt_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::gt_t = typename gt_helper<v1, v2>::type
```

strict greater operator

Template Parameters

v1	
v2	

8.23.2.7 inject_constant_t

```
template<typename Ring >
template<auto x>
using aerobus::polynomial< Ring >::inject_constant_t = val<typename Ring::template inject_constant_t<x>
>
```

makes the constant (native type) polynomial a_0

Template Parameters

x	

8.23.2.8 inject_ring_t

```
template<typename Ring >
template<typename v >
using aerobus::polynomial< Ring >::inject_ring_t = val<v>
```

makes the constant (ring type) polynomial a_0

Template Parameters

v	

8.23.2.9 lt_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::lt_t = typename lt_helper<v1, v2>::type
```

strict less operator

Template Parameters

v1	
v2	

8.23.2.10 mod_t

```
template<typename Ring >
```

```
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::mod_t = typename div_helper<v1, v2, zero, v1>::mod_type
```

modulo operator

Template Parameters

v1	
v2	

8.23.2.11 monomial_t

```
template<typename Ring >
template<typename coeff , size_t deg>
using aerobus::polynomial< Ring >::monomial_t = typename monomial<coeff, deg>::type
```

monomial : coeff X^deg

Template Parameters

coeff	
deg	

8.23.2.12 mul_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::mul_t = typename mul<v1, v2>::type
```

multiplication of two polynomials

Template Parameters

v1	
v2	

8.23.2.13 one

```
template<typename Ring >
using aerobus::polynomial< Ring >::one = val<typename Ring::one>
```

constant one

8.23.2.14 pos_t

```
template<typename Ring >
template<typename v >
using aerobus::polynomial< Ring >::pos_t = typename Ring::template pos_t<typename v::aN>
```

checks for positivity (an > 0)

Template Parameters

v	

8.23.2.15 simplify_t

```
template<typename Ring >
template<typename P >
using aerobus::polynomial< Ring >::simplify_t = typename simplify<P>::type
```

simplifies a polynomial (recursively deletes highest degree if zero, do nothing otherwise)

Template Parameters

P	

8.23.2.16 sub_t

```
template<typename Ring >
template<typename v1 , typename v2 >
using aerobus::polynomial< Ring >::sub_t = typename sub<v1, v2>::type
```

substraction of two polynomials

Template Parameters

v1	
v2	

8.23.2.17 X

```
template<typename Ring >
using aerobus::polynomial< Ring >::X = val<typename Ring::one, typename Ring::zero>
```

generator

8.23.2.18 zero

```
template<typename Ring >
using aerobus::polynomial< Ring >::zero = val<typename Ring::zero>
```

constant zero

8.23.3 Member Data Documentation

8.23.3.1 is_euclidean_domain

```
template<typename Ring >
constexpr bool aerobus::polynomial< Ring >::is_euclidean_domain = Ring::is_euclidean_domain
[static], [constexpr]
```

8.23.3.2 is_field

```
template<typename Ring >
constexpr bool aerobus::polynomial< Ring >::is_field = false  [static], [constexpr]
```

8.23.3.3 pos_v

```
template<typename Ring >
template<typename v >
constexpr bool aerobus::polynomial< Ring >::pos_v = pos_t<v>::value  [static], [constexpr]
```

positivity operator

Template Parameters

v	a value in polynomial::val

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.24 aerobus::type_list< Ts >::pop_front Struct Reference

removes types from head of the list

`#include <aerobus.h>`

Public Types

- using type = typename internal::pop_front_h< Ts... >::head
  type that was previously head of the list
- using tail = typename internal::pop_front_h< Ts... >::tail
  remaining types in parent list when front is removed

8.24.1 Detailed Description

template<typename... Ts>
struct aerobus::type_list< Ts >::pop_front

removes types from head of the list

8.24.2 Member Typedef Documentation

8.24.2.1 tail

```
template<typename... Ts>
using aerobus::type_list< Ts >::pop_front::tail = typename internal::pop_front_h<Ts...>::tail
```

remaining types in parent list when front is removed

8.24.2.2 type

```
template<typename... Ts>
using aerobus::type_list< Ts >::pop_front::type = typename internal::pop_front_h<Ts...>::head
```

type that was previously head of the list

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.25 aerobus::Quotient< Ring, X > Struct Template Reference

Quotient ring by the principal ideal generated by 'X' With i32 as Ring and i32::val<2> as X, Quotient is Z/2Z.

```
#include <aerobus.h>
```

Classes

- struct val
  projection values in the quotient ring

Public Types

- using zero = val< typename Ring::zero >
  zero value
- using one = val< typename Ring::one >
  one
- template<typename v1 , typename v2 >
  using add_t = val< typename Ring::template add_t< typename v1::type, typename v2::type > >
  addition operator
- template<typename v1 , typename v2 >
  using mul_t = val< typename Ring::template mul_t< typename v1::type, typename v2::type > >
  substraction operator
- template<typename v1 , typename v2 >
  using div_t = val< typename Ring::template div_t< typename v1::type, typename v2::type > >
  division operator
- template<typename v1 , typename v2 >
  using mod_t = val< typename Ring::template mod_t< typename v1::type, typename v2::type > >

modulus operator

- template<typename v1 , typename v2 >
  using eq_t = typename Ring::template eq_t< typename v1::type, typename v2::type >

  equality operator (as type)
- template<typename v1 >
  using pos_t = std::true_type

  positivity operator always true
- template<auto x>
  using inject_constant_t = val< typename Ring::template inject_constant_t< x > >

  inject a 'constant' in quotient ring∗
- template<typename v >
  using inject_ring_t = val< v >

  projects a value of Ring onto the quotient

Static Public Attributes

- template<typename v1 , typename v2 >
  static constexpr bool eq_v = Ring::template eq_t<typename v1::type, typename v2::type>::value

  addition operator (as boolean value)
- template<typename v >
  static constexpr bool pos_v = pos_t<v>::value

  positivity operator always true
- static constexpr bool is_euclidean_domain = true

  quotien rings are euclidean domain

8.25.1 Detailed Description

template<typename Ring, typename X>
requires IsRing<Ring>
struct aerobus::Quotient< Ring, X >

Quotient ring by the principal ideal generated by 'X' With i32 as Ring and i32::val<2> as X, Quotient is Z/2Z.

Template Parameters

Ring	A ring type, such as 'i32', must satisfy the IsRing concept
X	a value in Ring, such as i32::val<2>

8.25.2 Member Typedef Documentation

8.25.2.1 add_t

```
template<typename Ring , typename X >
template<typename v1 , typename v2 >
using aerobus::Quotient< Ring, X >::add_t = val<typename Ring::template add_t<typename v1↩
::type, typename v2::type> >
```

addition operator

Template Parameters

v1	a value in quotient ring
v2	a value in quotient ring

8.25.2.2 div_t

```
template<typename Ring , typename X >
template<typename v1 , typename v2 >
using aerobus::Quotient< Ring, X >::div_t = val<typename Ring::template div_t<typename v1↩
::type, typename v2::type> >
```

division operator

Template Parameters

v1	a value in quotient ring
v2	a value in quotient ring

8.25.2.3 eq_t

```
template<typename Ring , typename X >
template<typename v1 , typename v2 >
using aerobus::Quotient< Ring, X >::eq_t = typename Ring::template eq_t<typename v1::type,
typename v2::type>
```

equality operator (as type)

Template Parameters

v1	a value in quotient ring
v2	a value in quotient ring

8.25.2.4 inject_constant_t

```
template<typename Ring , typename X >
template<auto x>
using aerobus::Quotient< Ring, X >::inject_constant_t = val<typename Ring::template inject_constant_t<x>
>
```

inject a 'constant' in quotient ring∗

Template Parameters

x	a 'constant' from Ring point of view

8.25.2.5 inject_ring_t

```
template<typename Ring , typename X >
template<typename v >
using aerobus::Quotient< Ring, X >::inject_ring_t = val<v>
```

projects a value of Ring onto the quotient

Template Parameters

v	a value in Ring

8.25.2.6 mod_t

```
template<typename Ring , typename X >
template<typename v1 , typename v2 >
using aerobus::Quotient< Ring, X >::mod_t = val<typename Ring::template mod_t<typename v1↩
::type, typename v2::type> >
```

modulus operator

Template Parameters

v1	a value in quotient ring
v2	a value in quotient ring

8.25.2.7 mul_t

```
template<typename Ring , typename X >
template<typename v1 , typename v2 >
using aerobus::Quotient< Ring, X >::mul_t = val<typename Ring::template mul_t<typename v1↩
::type, typename v2::type> >
```

substraction operator

Template Parameters

v1	a value in quotient ring
v2	a value in quotient ring

8.25.2.8 one

```
template<typename Ring , typename X >
using aerobus::Quotient< Ring, X >::one = val<typename Ring::one>
```

one

8.25.2.9 pos_t

```
template<typename Ring , typename X >
template<typename v1 >
using aerobus::Quotient< Ring, X >::pos_t = std::true_type
```

positivity operator always true

Template Parameters

v1	a value in quotient ring

8.25.2.10 zero

```
template<typename Ring , typename X >
using aerobus::Quotient< Ring, X >::zero = val<typename Ring::zero>
```

zero value

8.25.3 Member Data Documentation

8.25.3.1 eq_v

```
template<typename Ring , typename X >
template<typename v1 , typename v2 >
constexpr bool aerobus::Quotient< Ring, X >::eq_v = Ring::template eq_t<typename v1::type,
typename v2::type>::value  [static], [constexpr]
```

addition operator (as boolean value)

Template Parameters

v1	a value in quotient ring
v2	a value in quotient ring

8.25.3.2 is_euclidean_domain

```
template<typename Ring , typename X >
constexpr bool aerobus::Quotient< Ring, X >::is_euclidean_domain = true  [static], [constexpr]
```

quotien rings are euclidean domain

8.25.3.3 pos_v

```
template<typename Ring , typename X >
template<typename v >
constexpr bool aerobus::Quotient< Ring, X >::pos_v = pos_t<v>::value  [static], [constexpr]
```

positivity operator always true

Template Parameters

v1	a value in quotient ring

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.26 aerobus::type_list< Ts >::split< index > Struct Template Reference

splits list at index

`#include <aerobus.h>`

Public Types

- using head = typename inner::head
- using tail = typename inner::tail

8.26.1 Detailed Description

template<typename... Ts>
template<size_t index>
struct aerobus::type_list< Ts >::split< index >

splits list at index

Template Parameters

index	

8.26.2 Member Typedef Documentation

8.26.2.1 head

```
template<typename...  Ts>
template<size_t index>
using aerobus::type_list< Ts >::split< index >::head = typename inner::head
```

8.26.2.2 tail

```
template<typename...  Ts>
template<size_t index>
using aerobus::type_list< Ts >::split< index >::tail = typename inner::tail
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.27 aerobus::type_list< Ts > Struct Template Reference

Empty pure template struct to handle type list.

`#include <aerobus.h>`

Classes

- struct pop_front
  removes types from head of the list
- struct split
  splits list at index

Public Types

- template<typename T >
  using push_front = type_list< T, Ts... >
  Adds T to front of the list.
- template<size_t index>
  using at = internal::type_at_t< index, Ts... >
  returns type at index
- template<typename T >
  using push_back = type_list< Ts..., T >
  pushes T at the tail of the list
- template<typename U >
  using concat = typename concat_h< U >::type
  concatenates two list into one
- template<typename T , size_t index>
  using insert = typename internal::insert_h< index, type_list< Ts... >, T >::type
  inserts type at index
- template<size_t index>
  using remove = typename internal::remove_h< index, type_list< Ts... > >::type
  removes type at index

Static Public Attributes

- static constexpr size_t length = sizeof...(Ts)
  length of list

8.27.1 Detailed Description

template<typename... Ts>
struct aerobus::type_list< Ts >

Empty pure template struct to handle type list.

A list of types.

Template Parameters

...Ts	types to store and manipulate at compile time

8.27.2 Member Typedef Documentation

8.27.2.1 at

```
template<typename...  Ts>
template<size_t index>
using aerobus::type_list< Ts >::at = internal::type_at_t<index, Ts...>
```

returns type at index

Template Parameters

index	

8.27.2.2 concat

```
template<typename...  Ts>
template<typename U >
using aerobus::type_list< Ts >::concat = typename concat_h<U>::type
```

concatenates two list into one

Template Parameters

U	

8.27.2.3 insert

```
template<typename...  Ts>
template<typename T , size_t index>
using aerobus::type_list< Ts >::insert = typename internal::insert_h<index, type_list<Ts...>,
T>::type
```

inserts type at index

Template Parameters

index	
T	

8.27.2.4 push_back

```
template<typename...  Ts>
template<typename T >
using aerobus::type_list< Ts >::push_back = type_list<Ts..., T>
```

pushes T at the tail of the list

Template Parameters

T	

8.27.2.5 push_front

```
template<typename...  Ts>
template<typename T >
using aerobus::type_list< Ts >::push_front = type_list<T, Ts...>
```

Adds T to front of the list.

Template Parameters

T	

8.27.2.6 remove

```
template<typename...  Ts>
template<size_t index>
using aerobus::type_list< Ts >::remove = typename internal::remove_h<index, type_list<Ts...>
>::type
```

removes type at index

Template Parameters

index	

8.27.3 Member Data Documentation

8.27.3.1 length

```
template<typename...  Ts>
constexpr size_t aerobus::type_list< Ts >::length = sizeof...(Ts)  [static], [constexpr]
```

length of list

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.28 aerobus::type_list<> Struct Reference

specialization for empty type list

`#include <aerobus.h>`

Public Types

- template<typename T >
  using push_front = type_list< T >
- template<typename T >
  using push_back = type_list< T >
- template<typename U >
  using concat = U
- template<typename T , size_t index>
  using insert = type_list< T >

Static Public Attributes

- static constexpr size_t length = 0

8.28.1 Detailed Description

specialization for empty type list

8.28.2 Member Typedef Documentation

8.28.2.1 concat

```
template<typename U >
using aerobus::type_list<>::concat = U
```

8.28.2.2 insert

```
template<typename T , size_t index>
using aerobus::type_list<>::insert = type_list<T>
```

8.28.2.3 push_back

```
template<typename T >
using aerobus::type_list<>::push_back = type_list<T>
```

8.28.2.4 push_front

```
template<typename T >
using aerobus::type_list<>::push_front = type_list<T>
```

8.28.3 Member Data Documentation

8.28.3.1 length

```
constexpr size_t aerobus::type_list<>::length = 0  [static], [constexpr]
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.29 aerobus::i32::val< x > Struct Template Reference

values in i32, again represented as types

```
#include <aerobus.h>
```

Public Types

- using enclosing_type = i32
  Enclosing ring type.
- using is_zero_t = std::bool_constant< x==0 >
  is value zero

Static Public Member Functions

- template<typename valueType >
  static constexpr DEVICE valueType get ()
  cast x into valueType
- static std::string to_string ()
  string representation of value

Static Public Attributes

- static constexpr int32_t v = x
  actual value stored in val type

8.29.1 Detailed Description

template<int32_t x>
struct aerobus::i32::val< x >

values in i32, again represented as types

Template Parameters

x	an actual integer

8.29.2 Member Typedef Documentation

8.29.2.1 enclosing_type

```
template<int32_t x>
using aerobus::i32::val< x >::enclosing_type = i32
```

Enclosing ring type.

8.29.2.2 is_zero_t

```
template<int32_t x>
using aerobus::i32::val< x >::is_zero_t = std::bool_constant<x == 0>
```

is value zero

8.29.3 Member Function Documentation

8.29.3.1 get()

```
template<int32_t x>
template<typename valueType >
static constexpr DEVICE valueType aerobus::i32::val< x >::get ( )  [inline], [static], [constexpr]
```

cast x into valueType

Template Parameters

valueType	double for example

8.29.3.2 to_string()

```
template<int32_t x>
static std::string aerobus::i32::val< x >::to_string ( )  [inline], [static]
```

string representation of value

8.29.4 Member Data Documentation

8.29.4.1 v

```
template<int32_t x>
constexpr int32_t aerobus::i32::val< x >::v = x  [static], [constexpr]
```

actual value stored in val type

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.30 aerobus::i64::val< x > Struct Template Reference

values in i64

`#include <aerobus.h>`

Public Types

- using inner_type = int32_t
  type of represented values
- using enclosing_type = i64
  enclosing ring type
- using is_zero_t = std::bool_constant< x==0 >
  is value zero

Static Public Member Functions

- template<typename valueType >
  static constexpr INLINED DEVICE valueType get ()
  cast value in valueType
- static std::string to_string ()
  string representation

Static Public Attributes

- static constexpr int64_t v = x
  actual value

8.30.1 Detailed Description

template<int64_t x>
struct aerobus::i64::val< x >

values in i64

Template Parameters

x	an actual integer

Examples

examples/compensated_horner.cpp.

8.30.2 Member Typedef Documentation

8.30.2.1 enclosing_type

```
template<int64_t x>
using aerobus::i64::val< x >::enclosing_type = i64
```

enclosing ring type

8.30.2.2 inner_type

```
template<int64_t x>
using aerobus::i64::val< x >::inner_type = int32_t
```

type of represented values

8.30.2.3 is_zero_t

```
template<int64_t x>
using aerobus::i64::val< x >::is_zero_t = std::bool_constant<x == 0>
```

is value zero

8.30.3 Member Function Documentation

8.30.3.1 get()

```
template<int64_t x>
template<typename valueType >
static constexpr INLINED DEVICE valueType aerobus::i64::val< x >::get ( )  [inline], [static],
[constexpr]
```

cast value in valueType

Template Parameters

valueType	(double for example)

8.30.3.2 to_string()

```
template<int64_t x>
static std::string aerobus::i64::val< x >::to_string ( )  [inline], [static]
```

string representation

8.30.4 Member Data Documentation

8.30.4.1 v

```
template<int64_t x>
constexpr int64_t aerobus::i64::val< x >::v = x  [static], [constexpr]
```

actual value

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.31 aerobus::polynomial< Ring >::val< coeffN, coeffs > Struct Template Reference

values (seen as types) in polynomial ring

```
#include <aerobus.h>
```

Public Types

- using ring_type = Ring
  ring coefficients live in
- using enclosing_type = polynomial< Ring >
  enclosing ring type
- using aN = coeffN
  heavy weight coefficient (non zero)
- using strip = val< coeffs... >
  remove largest coefficient
- using is_zero_t = std::bool_constant<(degree==0) &&(aN::is_zero_t::value)>
  true_type if polynomial is constant zero
- template<size_t index>
  using coeff_at_t = typename coeff_at< index >::type
  type of coefficient at index
- template<typename x >
  using value_at_t = horner_reduction_t< val > ::template inner< 0, degree+1 > ::template type< typename Ring::zero, x >

Static Public Member Functions

- static std::string to_string ()
  get a string representation of polynomial
- template<typename arithmeticType >
  static constexpr DEVICE INLINED arithmeticType eval (const arithmeticType &x)
  evaluates polynomial seen as a function operating on arithmeticType
- template<typename arithmeticType >
  static DEVICE INLINED arithmeticType compensated_eval (const arithmeticType &x)
  Evaluate polynomial on x using compensated horner scheme.

Static Public Attributes

- static constexpr size_t degree = sizeof...(coeffs)

  degree of the polynomial
- static constexpr bool is_zero_v = is_zero_t::value

  true if polynomial is constant zero

8.31.1 Detailed Description

template<typename Ring>
template<typename coeffN, typename... coeffs>
struct aerobus::polynomial< Ring >::val< coeffN, coeffs >

values (seen as types) in polynomial ring

Template Parameters

coeffN	high degree coefficient
...coeffs	lower degree coefficients

Examples

examples/compensated_horner.cpp.

8.31.2 Member Typedef Documentation

8.31.2.1 aN

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::aN = coeffN
```

heavy weight coefficient (non zero)

8.31.2.2 coeff_at_t

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
template<size_t index>
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::coeff_at_t = typename coeff_↩
at<index>::type
```

type of coefficient at index

Template Parameters

index	

8.31.2.3 enclosing_type

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::enclosing_type = polynomial<Ring>
```

enclosing ring type

8.31.2.4 is_zero_t

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::is_zero_t = std::bool_constant<(degree
== 0) && (aN::is_zero_t::value)>
```

true_type if polynomial is constant zero

8.31.2.5 ring_type

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::ring_type = Ring
```

ring coefficients live in

8.31.2.6 strip

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::strip = val<coeffs...>
```

remove largest coefficient

8.31.2.7 value_at_t

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
template<typename x >
using aerobus::polynomial< Ring >::val< coeffN, coeffs >::value_at_t = horner_reduction_t<val>
::template inner<0, degree + 1> ::template type<typename Ring::zero, x>
```

8.31.3 Member Function Documentation

8.31.3.1 compensated_eval()

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
template<typename arithmeticType >
static DEVICE INLINED arithmeticType aerobus::polynomial< Ring >::val< coeffN, coeffs >↩
::compensated_eval (
            const arithmeticType & x )  [inline], [static]
```

Evaluate polynomial on x using compensated horner scheme.

This is twice as accurate as simple eval (horner) but cannot be constexpr

Please note this makes no sense on integer types as arithmetic on integers is exact in IEEE

WARNING : this does not work with gcc with -O3 optimization level because gcc does illegal stuff with floating point arithmetic

Template Parameters

arithmeticType	float for example

Parameters

x	

8.31.3.2 eval()

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
template<typename arithmeticType >
static constexpr DEVICE INLINED arithmeticType aerobus::polynomial< Ring >::val< coeffN,
coeffs >::eval (
            const arithmeticType & x )  [inline], [static], [constexpr]
```

evaluates polynomial seen as a function operating on arithmeticType

Template Parameters

arithmeticType	usually float or double

Parameters

x	value

Returns

P(x)

8.31.3.3 to_string()

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
static std::string aerobus::polynomial< Ring >::val< coeffN, coeffs >::to_string ( )  [inline],
[static]
```

get a string representation of polynomial

Returns

something like a_n X^n + ... + a_1 X + a_0

8.31.4 Member Data Documentation

8.31.4.1 degree

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
constexpr size_t aerobus::polynomial< Ring >::val< coeffN, coeffs >::degree = sizeof...(coeffs)
[static], [constexpr]
```

degree of the polynomial

8.31.4.2 is_zero_v

```
template<typename Ring >
template<typename coeffN , typename...  coeffs>
constexpr bool aerobus::polynomial< Ring >::val< coeffN, coeffs >::is_zero_v = is_zero_t↩
::value  [static], [constexpr]
```

true if polynomial is constant zero

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.32 aerobus::Quotient< Ring, X >::val< V > Struct Template Reference

projection values in the quotient ring

```
#include <aerobus.h>
```

Public Types

- using raw_t = V
- using type = abs_t< typename Ring::template mod_t< V, X > >

8.32.1 Detailed Description

template<typename Ring, typename X>
template<typename V>
struct aerobus::Quotient< Ring, X >::val< V >

projection values in the quotient ring

Template Parameters

V	a value from 'Ring'

8.32.2 Member Typedef Documentation

8.32.2.1 raw_t

```
template<typename Ring , typename X >
template<typename V >
using aerobus::Quotient< Ring, X >::val< V >::raw_t = V
```

8.32.2.2 type

```
template<typename Ring , typename X >
template<typename V >
using aerobus::Quotient< Ring, X >::val< V >::type = abs_t<typename Ring::template mod_t<V,
X> >
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.33 aerobus::zpz< p >::val< x > Struct Template Reference

values in zpz

`#include <aerobus.h>`

Public Types

- using enclosing_type = zpz< p >
  enclosing ring type
- using is_zero_t = std::bool_constant< v==0 >
  true_type if zero

Static Public Member Functions

- template<typename valueType >
  static constexpr INLINED DEVICE valueType get ()
  get value as valueType
- static std::string to_string ()
  string representation

Static Public Attributes

- static constexpr int32_t v = x % p
  actual value
- static constexpr bool is_zero_v = v == 0
  true if zero

8.33.1 Detailed Description

template<int32_t p>
template<int32_t x>
struct aerobus::zpz< p >::val< x >

values in zpz

Template Parameters

x	an integer

8.33.2 Member Typedef Documentation

8.33.2.1 enclosing_type

```
template<int32_t p>
template<int32_t x>
using aerobus::zpz< p >::val< x >::enclosing_type = zpz<p>
```

enclosing ring type

8.33.2.2 is_zero_t

```
template<int32_t p>
template<int32_t x>
using aerobus::zpz< p >::val< x >::is_zero_t = std::bool_constant<v == 0>
```

true_type if zero

8.33.3 Member Function Documentation

8.33.3.1 get()

```
template<int32_t p>
template<int32_t x>
template<typename valueType >
static constexpr INLINED DEVICE valueType aerobus::zpz< p >::val< x >::get ( )  [inline],
[static], [constexpr]
```

get value as valueType

Template Parameters

valueType	an arithmetic type, such as float

8.33.3.2 to_string()

```
template<int32_t p>
template<int32_t x>
static std::string aerobus::zpz< p >::val< x >::to_string ( )  [inline], [static]
```

string representation

Returns

a string representation

8.33.4 Member Data Documentation

8.33.4.1 is_zero_v

```
template<int32_t p>
template<int32_t x>
constexpr bool aerobus::zpz< p >::val< x >::is_zero_v = v == 0  [static], [constexpr]
```

true if zero

8.33.4.2 v

```
template<int32_t p>
template<int32_t x>
constexpr int32_t aerobus::zpz< p >::val< x >::v = x % p  [static], [constexpr]
```

actual value

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.34 aerobus::polynomial< Ring >::val< coeffN > Struct Template Reference

specialization for constants

```
#include <aerobus.h>
```

Classes

- struct coeff_at
- struct coeff_at< index, std::enable_if_t<(index< 0||index > 0)> >
- struct coeff_at< index, std::enable_if_t<(index==0)> >

Public Types

- using ring_type = Ring
  ring coefficients live in
- using enclosing_type = polynomial< Ring >
  enclosing ring type
- using aN = coeffN
- using strip = val< coeffN >
- using is_zero_t = std::bool_constant< aN::is_zero_t::value >
- template<size_t index>
  using coeff_at_t = typename coeff_at< index >::type
- template<typename x >
  using value_at_t = coeffN

Static Public Member Functions

- static std::string to_string ()
- template<typename arithmeticType >
  static constexpr DEVICE INLINED arithmeticType eval (const arithmeticType &x)
- template<typename arithmeticType >
  static DEVICE INLINED arithmeticType compensated_eval (const arithmeticType &x)

Static Public Attributes

- static constexpr size_t degree = 0

  degree
- static constexpr bool is_zero_v = is_zero_t::value

8.34.1 Detailed Description

template<typename Ring>
template<typename coeffN>
struct aerobus::polynomial< Ring >::val< coeffN >

specialization for constants

Template Parameters

coeffN	

8.34.2 Member Typedef Documentation

8.34.2.1 aN

```
template<typename Ring >
template<typename coeffN >
using aerobus::polynomial< Ring >::val< coeffN >::aN = coeffN
```

8.34.2.2 coeff_at_t

```
template<typename Ring >
template<typename coeffN >
template<size_t index>
using aerobus::polynomial< Ring >::val< coeffN >::coeff_at_t = typename coeff_at<index>↩
::type
```

8.34.2.3 enclosing_type

```
template<typename Ring >
template<typename coeffN >
using aerobus::polynomial< Ring >::val< coeffN >::enclosing_type = polynomial<Ring>
```

enclosing ring type

8.34.2.4 is_zero_t

```
template<typename Ring >
template<typename coeffN >
using aerobus::polynomial< Ring >::val< coeffN >::is_zero_t = std::bool_constant<aN::is_↩
zero_t::value>
```

8.34.2.5 ring_type

```
template<typename Ring >
template<typename coeffN >
using aerobus::polynomial< Ring >::val< coeffN >::ring_type = Ring
```

ring coefficients live in

8.34.2.6 strip

```
template<typename Ring >
template<typename coeffN >
using aerobus::polynomial< Ring >::val< coeffN >::strip = val<coeffN>
```

8.34.2.7 value_at_t

```
template<typename Ring >
template<typename coeffN >
template<typename x >
using aerobus::polynomial< Ring >::val< coeffN >::value_at_t = coeffN
```

8.34.3 Member Function Documentation

8.34.3.1 compensated_eval()

```
template<typename Ring >
template<typename coeffN >
template<typename arithmeticType >
static DEVICE INLINED arithmeticType aerobus::polynomial< Ring >::val< coeffN >::compensated↩
_eval (
            const arithmeticType & x )  [inline], [static]
```

8.34.3.2 eval()

```
template<typename Ring >
template<typename coeffN >
template<typename arithmeticType >
static constexpr DEVICE INLINED arithmeticType aerobus::polynomial< Ring >::val< coeffN >↩
::eval (
            const arithmeticType & x )  [inline], [static], [constexpr]
```

8.34.3.3 to_string()

```
template<typename Ring >
template<typename coeffN >
static std::string aerobus::polynomial< Ring >::val< coeffN >::to_string ( )  [inline], [static]
```

8.34.4 Member Data Documentation

8.34.4.1 degree

```
template<typename Ring >
template<typename coeffN >
constexpr size_t aerobus::polynomial< Ring >::val< coeffN >::degree = 0  [static], [constexpr]
```

degree

8.34.4.2 is_zero_v

```
template<typename Ring >
template<typename coeffN >
constexpr bool aerobus::polynomial< Ring >::val< coeffN >::is_zero_v = is_zero_t::value  [static],
[constexpr]
```

The documentation for this struct was generated from the following file:

- src/aerobus.h

8.35 aerobus::zpz< p > Struct Template Reference

congruence classes of integers modulo p (32 bits)

```
#include <aerobus.h>
```

Classes

- struct val
  values in zpz

Public Types

- using inner_type = int32_t

  underlying type for values
- template<auto x>
  using inject_constant_t = val< static_cast< int32_t >(x)>

  injects a constant integer into zpz
- using zero = val< 0 >

  zero value
- using one = val< 1 >

  one value
- template<typename v1 , typename v2 >
  using add_t = typename add< v1, v2 >::type

  addition operator
- template<typename v1 , typename v2 >
  using sub_t = typename sub< v1, v2 >::type

  substraction operator
- template<typename v1 , typename v2 >
  using mul_t = typename mul< v1, v2 >::type

  multiplication operator
- template<typename v1 , typename v2 >
  using div_t = typename div< v1, v2 >::type

  division operator
- template<typename v1 , typename v2 >
  using mod_t = typename remainder< v1, v2 >::type

  modulo operator
- template<typename v1 , typename v2 >
  using gt_t = typename gt< v1, v2 >::type

  strictly greater operator (type)
- template<typename v1 , typename v2 >
  using lt_t = typename lt< v1, v2 >::type

  strictly smaller operator (type)
- template<typename v1 , typename v2 >
  using eq_t = typename eq< v1, v2 >::type

  equality operator (type)
- template<typename v1 , typename v2 >
  using gcd_t = gcd_t< i32, v1, v2 >

  greatest common divisor
- template<typename v1 >
  using pos_t = typename pos< v1 >::type

  positivity operator (type)

Static Public Attributes

- static constexpr bool is_field = is_prime<p>::value

  true iff p is prime
- static constexpr bool is_euclidean_domain = true

  always true
- template<typename v1 , typename v2 >
  static constexpr bool gt_v = gt_t<v1, v2>::value

  strictly greater operator (booleanvalue)

- template<typename v1 , typename v2 >
  static constexpr bool lt_v = lt_t<v1, v2>::value
  strictly smaller operator (booleanvalue)
- template<typename v1 , typename v2 >
  static constexpr bool eq_v = eq_t<v1, v2>::value
  equality operator (booleanvalue)
- template<typename v >
  static constexpr bool pos_v = pos_t<v>::value
  positivity operator (boolean value)

8.35.1 Detailed Description

template<int32_t p>
struct aerobus::zpz< p >

congruence classes of integers modulo p (32 bits)

if p is prime, zpz

is a field

Template Parameters

p	a integer

Examples

examples/modular_arithmetic.cpp, and examples/polynomials_over_finite_field.cpp.

8.35.2 Member Typedef Documentation

8.35.2.1 add_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::add_t = typename add<v1, v2>::type
```

addition operator

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.2 div_t

```
template<int32_t p>
```

```
template<typename v1 , typename v2 >
using aerobus::zpz< p >::div_t = typename div<v1, v2>::type
```

division operator

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.3 eq_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::eq_t = typename eq<v1, v2>::type
```

equality operator (type)

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.4 gcd_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::gcd_t = gcd_t<i32, v1, v2>
```

greatest common divisor

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.5 gt_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::gt_t = typename gt<v1, v2>::type
```

strictly greater operator (type)

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.6 inject_constant_t

```
template<int32_t p>
template<auto x>
using aerobus::zpz< p >::inject_constant_t = val<static_cast<int32_t>(x)>
```

injects a constant integer into zpz

Template Parameters

x	an integer

8.35.2.7 inner_type

```
template<int32_t p>
using aerobus::zpz< p >::inner_type = int32_t
```

underlying type for values

8.35.2.8 lt_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::lt_t = typename lt<v1, v2>::type
```

strictly smaller operator (type)

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.9 mod_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::mod_t = typename remainder<v1, v2>::type
```

modulo operator

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.10 mul_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::mul_t = typename mul<v1, v2>::type
```

multiplication operator

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.11 one

```
template<int32_t p>
using aerobus::zpz< p >::one = val<1>
```

one value

8.35.2.12 pos_t

```
template<int32_t p>
template<typename v1 >
using aerobus::zpz< p >::pos_t = typename pos<v1>::type
```

positivity operator (type)

Template Parameters

v1	a value in zpz::val

8.35.2.13 sub_t

```
template<int32_t p>
template<typename v1 , typename v2 >
using aerobus::zpz< p >::sub_t = typename sub<v1, v2>::type
```

substraction operator

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.2.14 zero

```
template<int32_t p>
using aerobus::zpz< p >::zero = val<0>
```

zero value

8.35.3 Member Data Documentation

8.35.3.1 eq_v

```
template<int32_t p>
template<typename v1 , typename v2 >
constexpr bool aerobus::zpz< p >::eq_v = eq_t<v1, v2>::value  [static], [constexpr]
```

equality operator (booleanvalue)

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.3.2 gt_v

```
template<int32_t p>
template<typename v1 , typename v2 >
constexpr bool aerobus::zpz< p >::gt_v = gt_t<v1, v2>::value  [static], [constexpr]
```

strictly greater operator (booleanvalue)

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.3.3 is_euclidean_domain

```
template<int32_t p>
constexpr bool aerobus::zpz< p >::is_euclidean_domain = true  [static], [constexpr]
```

always true

8.35.3.4 is_field

```
template<int32_t p>
constexpr bool aerobus::zpz< p >::is_field = is_prime<p>::value  [static], [constexpr]
```

true iff p is prime

8.35.3.5 lt_v

```
template<int32_t p>
template<typename v1 , typename v2 >
constexpr bool aerobus::zpz< p >::lt_v = lt_t<v1, v2>::value  [static], [constexpr]
```

strictly smaller operator (booleanvalue)

Template Parameters

v1	a value in zpz::val
v2	a value in zpz::val

8.35.3.6 pos_v

```
template<int32_t p>
template<typename v >
constexpr bool aerobus::zpz< p >::pos_v = pos_t<v>::value  [static], [constexpr]
```

positivity operator (boolean value)

Template Parameters

v1	a value in zpz::val

The documentation for this struct was generated from the following file:

- src/aerobus.h

Chapter 9

File Documentation

9.1 README.md File Reference

9.2 src/aerobus.h File Reference

```
#include <cstdint>
#include <cstddef>
#include <cstring>
#include <type_traits>
#include <utility>
#include <algorithm>
#include <functional>
#include <string>
#include <concepts>
#include <array>
```

Include dependency graph for aerobus.h:

9.3 aerobus.h

Go to the documentation of this file.

```
00001 // -*- lsst-c++ -*-
00002 #ifndef __INC_AEROBUS__ // NOLINT
00003 #define __INC_AEROBUS__
00004
00005 #include <cstdint>
00006 #include <cstddef>
00007 #include <cstring>
00008 #include <type_traits>
00009 #include <utility>
00010 #include <algorithm>
00011 #include <functional>
00012 #include <string>
00013 #include <concepts> // NOLINT
00014 #include <array>
00015 #ifdef WITH_CUDA_FP16
00016 #include <bit>
00017 #include <cuda_fp16.h>
00018 #endif
00019
00023 #ifdef _MSC_VER
00024 #define ALIGNED(x) __declspec(align(x))
00025 #define INLINED __forceinline
00026 #else
00027 #define ALIGNED(x) __attribute__((aligned(x)))
00028 #define INLINED __attribute__((always_inline)) inline
```

```
00029 #endif
00030
00031 #ifdef __CUDACC__
00032 #define DEVICE __host__ __device__
00033 #else
00034 #define DEVICE
00035 #endif
00036
00038
00040
00042
00043 // aligned allocation
00044 namespace aerobus {
00051     template<typename T>
00052     T* aligned_malloc(size_t count, size_t alignment) {
00053         #ifdef _MSC_VER
00054         return static_cast<T*>(_aligned_malloc(count * sizeof(T), alignment));
00055         #else
00056         return static_cast<T*>(aligned_alloc(alignment, count * sizeof(T)));
00057         #endif
00058     }
00059 }  // namespace aerobus
00060
00061 // concepts
00062 namespace aerobus {
00064     template <typename R>
00065     concept IsRing = requires {
00066         typename R::one;
00067         typename R::zero;
00068         typename R::template add_t<typename R::one, typename R::one>;
00069         typename R::template sub_t<typename R::one, typename R::one>;
00070         typename R::template mul_t<typename R::one, typename R::one>;
00071     };
00072
00074     template <typename R>
00075     concept IsEuclideanDomain = IsRing<R> && requires {
00076         typename R::template div_t<typename R::one, typename R::one>;
00077         typename R::template mod_t<typename R::one, typename R::one>;
00078         typename R::template gcd_t<typename R::one, typename R::one>;
00079         typename R::template eq_t<typename R::one, typename R::one>;
00080         typename R::template pos_t<typename R::one>;
00081
00082         R::template pos_v<typename R::one> == true;
00083         // typename R::template gt_t<typename R::one, typename R::zero>;
00084         R::is_euclidean_domain == true;
00085     };
00086
00088     template<typename R>
00089     concept IsField = IsEuclideanDomain<R> && requires {
00090         R::is_field == true;
00091     };
00092 }  // namespace aerobus
00093
00094 #ifdef WITH_CUDA_FP16
00095 // all this shit is required because of NVIDIA bug https://developer.nvidia.com/bugs/4863696
00096 namespace aerobus {
00097     namespace internal {
00098         static consteval DEVICE uint16_t my_internal_float2half(
00099             const float f, uint32_t &sign, uint32_t &remainder) {
00100             uint32_t x;
00101             uint32_t u;
00102             uint32_t result;
00103             x = std::bit_cast<int32_t>(f);
00104             u = (x & 0x7fffffffU);
00105             sign = ((x >> 16U) & 0x8000U);
00106             // NaN/+Inf/-Inf
00107             if (u >= 0x7f800000U) {
00108                 remainder = 0U;
00109                 result = ((u == 0x7f800000U) ? (sign | 0x7c00U) : 0x7fffU);
00110             } else if (u > 0x477fefffU) {  // Overflows
00111                 remainder = 0x80000000U;
00112                 result = (sign | 0x7bffU);
00113             } else if (u >= 0x38800000U) {  // Normal numbers
00114                 remainder = u << 19U;
00115                 u -= 0x38000000U;
00116                 result = (sign | (u >> 13U));
00117             } else if (u < 0x33000001U) {  // +0/-0
00118                 remainder = u;
00119                 result = sign;
00120             } else {  // Denormal numbers
00121                 const uint32_t exponent = u >> 23U;
00122                 const uint32_t shift = 0x7eU - exponent;
00123                 uint32_t mantissa = (u & 0x7fffffU);
00124                 mantissa |= 0x800000U;
00125                 remainder = mantissa << (32U - shift);
00126                 result = (sign | (mantissa >> shift));
00127                 result &= 0x0000FFFFU;
```

```
00128             }
00129             return static_cast<uint16_t>(result);
00130         }
00131 
00132         static consteval DEVICE __half my_float2half_rn(const float a) {
00133             __half val;
00134             __half_raw r;
00135             uint32_t sign = 0U;
00136             uint32_t remainder = 0U;
00137             r.x = my_internal_float2half(a, sign, remainder);
00138             if ((remainder > 0x80000000U) || ((remainder == 0x80000000U) && ((r.x & 0x1U) != 0U))) {
00139                 r.x++;
00140             }
00141 
00142             val = std::bit_cast<__half>(r);
00143             return val;
00144         }
00145 
00146         template <int16_t i>
00147         static constexpr __half convert_int16_to_half = my_float2half_rn(static_cast<float>(i));
00148 
00149 
00150         template <typename Out, int16_t x, typename E = void>
00151         struct int16_convert_helper;
00152 
00153         template <typename Out, int16_t x>
00154         struct int16_convert_helper<Out, x,
00155             std::enable_if_t<!std::is_same_v<Out, __half> && !std::is_same_v<Out, __half2>> {
00156             static constexpr Out value() {
00157                 return static_cast<Out>(x);
00158             }
00159         };
00160 
00161         template <int16_t x>
00162         struct int16_convert_helper<__half, x> {
00163             static constexpr __half value() {
00164                 return convert_int16_to_half<x>;
00165             }
00166         };
00167 
00168         template <int16_t x>
00169         struct int16_convert_helper<__half2, x> {
00170             static constexpr __half2 value() {
00171                 return __half2(convert_int16_to_half<x>, convert_int16_to_half<x>);
00172             }
00173         };
00174 
00175     }  // namespace internal
00176 }  // namespace aerobus
00177 #endif
00178 
00179 //  cast
00180 namespace aerobus {
00181     namespace internal {
00182         template<typename Out, typename In>
00183         struct staticcast {
00184             template<auto x>
00185             static consteval INLINED DEVICE Out func() {
00186                 return static_cast<Out>(x);
00187             }
00188         };
00189 
00190         #ifdef WITH_CUDA_FP16
00191         template<>
00192         struct staticcast<__half, int16_t> {
00193             template<int16_t x>
00194             static consteval INLINED DEVICE __half func() {
00195                 return int16_convert_helper<__half, x>::value();
00196             }
00197         };
00198 
00199         template<>
00200         struct staticcast<__half2, int16_t> {
00201             template<int16_t x>
00202             static consteval INLINED DEVICE __half2 func() {
00203                 return int16_convert_helper<__half2, x>::value();
00204             }
00205         };
00206         #endif
00207     }  // namespace internal
00208 }  // namespace aerobus
00209 
00210 // fma_helper, required because nvidia fails to reconstruct fma for fp16 types
00211 namespace aerobus {
00212     namespace internal {
00213         template<typename T>
00214         struct fma_helper;
```

```
00215
00216         template<>
00217         struct fma_helper<double> {
00218             static constexpr INLINED DEVICE double eval(const double x, const double y, const double
      z) {
00219                 return x * y + z;
00220             }
00221         };
00222
00223         template<>
00224         struct fma_helper<long double> {
00225             static constexpr INLINED DEVICE long double eval(
00226                 const long double x, const long double y, const long double z) {
00227                     return x * y + z;
00228             }
00229         };
00230
00231         template<>
00232         struct fma_helper<float> {
00233             static constexpr INLINED DEVICE float eval(const float x, const float y, const float z) {
00234                 return x * y + z;
00235             }
00236         };
00237
00238         template<>
00239         struct fma_helper<int32_t> {
00240             static constexpr INLINED DEVICE int16_t eval(const int16_t x, const int16_t y, const
      int16_t z) {
00241                 return x * y + z;
00242             }
00243         };
00244
00245         template<>
00246         struct fma_helper<int16_t> {
00247             static constexpr INLINED DEVICE int32_t eval(const int32_t x, const int32_t y, const
      int32_t z) {
00248                 return x * y + z;
00249             }
00250         };
00251
00252         template<>
00253         struct fma_helper<int64_t> {
00254             static constexpr INLINED DEVICE int64_t eval(const int64_t x, const int64_t y, const
      int64_t z) {
00255                 return x * y + z;
00256             }
00257         };
00258
00259         #ifdef WITH_CUDA_FP16
00260         template<>
00261         struct fma_helper<__half> {
00262             static constexpr INLINED DEVICE __half eval(const __half x, const __half y, const __half
      z) {
00263                 #ifdef __CUDA_ARCH__
00264                 return __hfma(x, y, z);
00265                 #else
00266                 return x * y + z;
00267                 #endif
00268             }
00269         };
00270         template<>
00271         struct fma_helper<__half2> {
00272             static constexpr INLINED DEVICE __half2 eval(const __half2 x, const __half2 y, const
      __half2 z) {
00273                 #ifdef __CUDA_ARCH__
00274                 return __hfma2(x, y, z);
00275                 #else
00276                 return x * y + z;
00277                 #endif
00278             }
00279         };
00280         #endif
00281     }  // namespace internal
00282 }  // namespace aerobus
00283
00284 // compensated horner utilities
00285 namespace aerobus {
00286     namespace internal {
00287         template <typename T>
00288         struct FloatLayout;
00289
00290         #ifdef _MSC_VER
00291         template <>
00292         struct FloatLayout<long double> {
00293             static constexpr uint8_t exponent = 11;
00294             static constexpr uint8_t mantissa = 53;
00295             static constexpr uint8_t r = 27;  // ceil(mantissa/2)
```

```
00296         };
00297         #else
00298         template <>
00299         struct FloatLayout<long double> {
00300             static constexpr uint8_t exponent = 15;
00301             static constexpr uint8_t mantissa = 63;
00302             static constexpr uint8_t r = 32;  // ceil(mantissa/2)
00303             static constexpr long double shift = (1LL << r) + 1;
00304         };
00305         #endif
00306 
00307         template <>
00308         struct FloatLayout<double> {
00309             static constexpr uint8_t exponent = 11;
00310             static constexpr uint8_t mantissa = 53;
00311             static constexpr uint8_t r = 27;  // ceil(mantissa/2)
00312             static constexpr double shift = (1LL << r) + 1;
00313         };
00314 
00315         template <>
00316         struct FloatLayout<float> {
00317             static constexpr uint8_t exponent = 8;
00318             static constexpr uint8_t mantissa = 24;
00319             static constexpr uint8_t r = 11;  // ceil(mantissa/2)
00320             static constexpr float shift = (1 << r) + 1;
00321         };
00322 
00323         #ifdef WITH_CUDA_FP16
00324         template <>
00325         struct FloatLayout<__half> {
00326             static constexpr uint8_t exponent = 5;
00327             static constexpr uint8_t mantissa = 11;  // 10 explicitely stored
00328             static constexpr uint8_t r = 6;  // ceil(mantissa/2)
00329             static constexpr __half shift = internal::int16_convert_helper<__half, 65>::value();
00330         };
00331 
00332         template <>
00333         struct FloatLayout<__half2> {
00334             static constexpr uint8_t exponent = 5;
00335             static constexpr uint8_t mantissa = 11;  // 10 explicitely stored
00336             static constexpr uint8_t r = 6;  // ceil(mantissa/2)
00337             static constexpr __half2 shift = internal::int16_convert_helper<__half2, 65>::value();
00338         };
00339         #endif
00340 
00341         template<typename T>
00342         static constexpr INLINED DEVICE void split(T a, T *x, T *y) {
00343             T z = a * FloatLayout<T>::shift;
00344             *x = z - (z - a);
00345             *y = a - *x;
00346         }
00347 
00348         template<typename T>
00349         static constexpr INLINED DEVICE void two_sum(T a, T b, T *x, T *y) {
00350             *x = a + b;
00351             T z = *x - a;
00352             *y = (a - (*x - z)) + (b - z);
00353         }
00354 
00355         template<typename T>
00356         static constexpr INLINED DEVICE void two_prod(T a, T b, T *x, T *y) {
00357             *x = a * b;
00358             #ifdef __clang__
00359             *y = fma_helper<T>::eval(a, b, -*x);
00360             #else
00361             T ah, al, bh, bl;
00362             split(a, &ah, &al);
00363             split(b, &bh, &bl);
00364             *y = al * bl - (((*x - ah * bh) - al * bh) - ah * bl);
00365             #endif
00366         }
00367 
00368         template<typename T, size_t N>
00369         static INLINED DEVICE T horner(T *p1, T *p2, T x) {
00370             T r = p1[0] + p2[0];
00371             for (int64_t i = N - 1; i >= 0; --i) {
00372                 r = r * x + p1[N - i] + p2[N - i];
00373             }
00374 
00375             return r;
00376         }
00377     }  // namespace internal
00378 }  // namespace aerobus
00379 
00380 // utilities
00381 namespace aerobus {
00382     namespace internal {
```

```
00383         template<template<typename...> typename TT, typename T>
00384         struct is_instantiation_of : std::false_type { };
00385
00386         template<template<typename...> typename TT, typename... Ts>
00387         struct is_instantiation_of<TT, TT<Ts...>> : std::true_type { };
00388
00389         template<template<typename...> typename TT, typename T>
00390         inline constexpr bool is_instantiation_of_v = is_instantiation_of<TT, T>::value;
00391
00392         template <int64_t i, typename T, typename... Ts>
00393         struct type_at {
00394             static_assert(i < sizeof...(Ts) + 1, "index out of range");
00395             using type = typename type_at<i - 1, Ts...>::type;
00396         };
00397
00398         template <typename T, typename... Ts> struct type_at<0, T, Ts...> {
00399             using type = T;
00400         };
00401
00402         template <size_t i, typename... Ts>
00403         using type_at_t = typename type_at<i, Ts...>::type;
00404
00405
00406         template<size_t n, size_t i, typename E = void>
00407         struct _is_prime {};
00408
00409         template<size_t i>
00410         struct _is_prime<0, i> {
00411             static constexpr bool value = false;
00412         };
00413
00414         template<size_t i>
00415         struct _is_prime<1, i> {
00416             static constexpr bool value = false;
00417         };
00418
00419         template<size_t i>
00420         struct _is_prime<2, i> {
00421             static constexpr bool value = true;
00422         };
00423
00424         template<size_t i>
00425         struct _is_prime<3, i> {
00426             static constexpr bool value = true;
00427         };
00428
00429         template<size_t i>
00430         struct _is_prime<5, i> {
00431             static constexpr bool value = true;
00432         };
00433
00434         template<size_t i>
00435         struct _is_prime<7, i> {
00436             static constexpr bool value = true;
00437         };
00438
00439         template<size_t n, size_t i>
00440         struct _is_prime<n, i, std::enable_if_t<(n != 2 && n % 2 == 0)>> {
00441             static constexpr bool value = false;
00442         };
00443
00444         template<size_t n, size_t i>
00445         struct _is_prime<n, i, std::enable_if_t<(n != 2 && n != 3 && n % 2 != 0 && n % 3 == 0)>> {
00446             static constexpr bool value = false;
00447         };
00448
00449         template<size_t n, size_t i>
00450         struct _is_prime<n, i, std::enable_if_t<(n >= 9 && i * i > n)>> {
00451             static constexpr bool value = true;
00452         };
00453
00454         template<size_t n, size_t i>
00455         struct _is_prime<n, i, std::enable_if_t<(
00456             n % i == 0 &&
00457             n >= 9 &&
00458             n % 3 != 0 &&
00459             n % 2 != 0 &&
00460             i * i > n)>> {
00461             static constexpr bool value = true;
00462         };
00463
00464         template<size_t n, size_t i>
00465         struct _is_prime<n, i, std::enable_if_t<(
00466             n % (i+2) == 0 &&
00467             n >= 9 &&
00468             n % 3 != 0 &&
00469             n % 2 != 0 &&
```

```
00470             i * i <= n)» {
00471             static constexpr bool value = true;
00472         };
00473 
00474         template<size_t n, size_t i>
00475         struct _is_prime<n, i, std::enable_if_t<(
00476                 n % (i+2) != 0 &&
00477                 n % i != 0 &&
00478                 n >= 9 &&
00479                 n % 3 != 0 &&
00480                 n % 2 != 0 &&
00481                 (i * i <= n))» {
00482             static constexpr bool value = _is_prime<n, i+6>::value;
00483         };
00484     }  // namespace internal
00485 
00488     template<size_t n>
00489     struct is_prime {
00491         static constexpr bool value = internal::_is_prime<n, 5>::value;
00492     };
00493 
00497     template<size_t n>
00498     static constexpr bool is_prime_v = is_prime<n>::value;
00499 
00500     // gcd
00501     namespace internal {
00502         template <std::size_t... Is>
00503         constexpr auto index_sequence_reverse(std::index_sequence<Is...> const&)
00504             -> decltype(std::index_sequence<sizeof...(Is) - 1U - Is...>{});
00505 
00506         template <std::size_t N>
00507         using make_index_sequence_reverse
00508             = decltype(index_sequence_reverse(std::make_index_sequence<N>{}));
00509 
00515         template<typename Ring, typename E = void>
00516         struct gcd;
00517 
00518         template<typename Ring>
00519         struct gcd<Ring, std::enable_if_t<Ring::is_euclidean_domain» {
00520             template<typename A, typename B, typename E = void>
00521             struct gcd_helper {};
00522 
00523             // B = 0, A > 0
00524             template<typename A, typename B>
00525             struct gcd_helper<A, B, std::enable_if_t<
00526                 ((B::is_zero_t::value) &&
00527                     (Ring::template gt_t<A, typename Ring::zero>::value))» {
00528                 using type = A;
00529             };
00530 
00531             // B = 0, A < 0
00532             template<typename A, typename B>
00533             struct gcd_helper<A, B, std::enable_if_t<
00534                 ((B::is_zero_t::value) &&
00535                     !(Ring::template gt_t<A, typename Ring::zero>::value))» {
00536                 using type = typename Ring::template sub_t<typename Ring::zero, A>;
00537             };
00538 
00539             // B != 0
00540             template<typename A, typename B>
00541             struct gcd_helper<A, B, std::enable_if_t<
00542                 (!B::is_zero_t::value)
00543                 » {
00544             private: // NOLINT
00545                 // A / B
00546                 using k = typename Ring::template div_t<A, B>;
00547                 // A - (A/B)*B = A % B
00548                 using m = typename Ring::template sub_t<A, typename Ring::template mul_t<k, B»;
00549 
00550             public:
00551                 using type = typename gcd_helper<B, m>::type;
00552             };
00553 
00554             template<typename A, typename B>
00555             using type = typename gcd_helper<A, B>::type;
00556         };
00557     }  // namespace internal
00558 
00559     // vadd and vmul
00560     namespace internal {
00561         template<typename... vals>
00562         struct vmul {};
00563 
00564         template<typename v1, typename... vals>
00565         struct vmul<v1, vals...> {
00566             using type = typename v1::enclosing_type::template mul_t<v1, typename
      vmul<vals...>::type>;
```

```
00567         };
00568
00569         template<typename v1>
00570         struct vmul<v1> {
00571             using type = v1;
00572         };
00573
00574         template<typename... vals>
00575         struct vadd {};
00576
00577         template<typename v1, typename... vals>
00578         struct vadd<v1, vals...> {
00579             using type = typename v1::enclosing_type::template add_t<v1, typename
      vadd<vals...>::type>;
00580         };
00581
00582         template<typename v1>
00583         struct vadd<v1> {
00584             using type = v1;
00585         };
00586     }  // namespace internal
00587
00590     template<typename T, typename A, typename B>
00591     using gcd_t = typename internal::gcd<T>::template type<A, B>;
00592
00596     template<typename... vals>
00597     using vadd_t = typename internal::vadd<vals...>::type;
00598
00602     template<typename... vals>
00603     using vmul_t = typename internal::vmul<vals...>::type;
00604
00608     template<typename val>
00609     requires IsEuclideanDomain<typename val::enclosing_type>
00610     using abs_t = std::conditional_t<
00611                     val::enclosing_type::template pos_v<val>,
00612                     val, typename val::enclosing_type::template
      sub_t<typename val::enclosing_type::zero, val>>;
00613 }  // namespace aerobus
00614
00615 // embedding
00616 namespace aerobus {
00621     template<typename Small, typename Large, typename E = void>
00622     struct Embed;
00623 }  // namespace aerobus
00624
00625 namespace aerobus {
00630     template<typename Ring, typename X>
00631     requires IsRing<Ring>
00632     struct Quotient {
00635         template <typename V>
00636         struct val {
00637          public:
00638             using raw_t = V;
00639             using type = abs_t<typename Ring::template mod_t<V, X>>;
00640         };
00641
00643         using zero = val<typename Ring::zero>;
00644
00646         using one = val<typename Ring::one>;
00647
00651         template<typename v1, typename v2>
00652         using add_t = val<typename Ring::template add_t<typename v1::type, typename v2::type>>;
00653
00657         template<typename v1, typename v2>
00658         using mul_t = val<typename Ring::template mul_t<typename v1::type, typename v2::type>>;
00659
00663         template<typename v1, typename v2>
00664         using div_t = val<typename Ring::template div_t<typename v1::type, typename v2::type>>;
00665
00669         template<typename v1, typename v2>
00670         using mod_t = val<typename Ring::template mod_t<typename v1::type, typename v2::type>>;
00671
00675         template<typename v1, typename v2>
00676         using eq_t = typename Ring::template eq_t<typename v1::type, typename v2::type>;
00677
00681         template<typename v1, typename v2>
00682         static constexpr bool eq_v = Ring::template eq_t<typename v1::type, typename v2::type>::value;
00683
00687         template<typename v1>
00688         using pos_t = std::true_type;
00689
00693         template<typename v>
00694         static constexpr bool pos_v = pos_t<v>::value;
00695
00697         static constexpr bool is_euclidean_domain = true;
00698
00702         template<auto x>
```

```
00703         using inject_constant_t = val<typename Ring::template inject_constant_t<x>>;
00704
00708         template<typename v>
00709         using inject_ring_t = val<v>;
00710     };
00711
00715     template<typename Ring, typename X>
00716     struct Embed<Quotient<Ring, X>, Ring> {
00719         template<typename val>
00720         using type = typename val::raw_t;
00721     };
00722 }  // namespace aerobus
00723
00724 // type_list
00725 namespace aerobus {
00727     template <typename... Ts>
00728     struct type_list;
00729
00730     namespace internal {
00731         template <typename T, typename... Us>
00732         struct pop_front_h {
00733             using tail = type_list<Us...>;
00734             using head = T;
00735         };
00736
00737         template <size_t index, typename L1, typename L2>
00738         struct split_h {
00739          private:
00740             static_assert(index <= L2::length, "index ouf of bounds");
00741             using a = typename L2::pop_front::type;
00742             using b = typename L2::pop_front::tail;
00743             using c = typename L1::template push_back<a>;
00744
00745          public:
00746             using head = typename split_h<index - 1, c, b>::head;
00747             using tail = typename split_h<index - 1, c, b>::tail;
00748         };
00749
00750         template <typename L1, typename L2>
00751         struct split_h<0, L1, L2> {
00752             using head = L1;
00753             using tail = L2;
00754         };
00755
00756         template <size_t index, typename L, typename T>
00757         struct insert_h {
00758             static_assert(index <= L::length, "index ouf of bounds");
00759             using s = typename L::template split<index>;
00760             using left = typename s::head;
00761             using right = typename s::tail;
00762             using ll = typename left::template push_back<T>;
00763             using type = typename ll::template concat<right>;
00764         };
00765
00766         template <size_t index, typename L>
00767         struct remove_h {
00768             using s = typename L::template split<index>;
00769             using left = typename s::head;
00770             using right = typename s::tail;
00771             using rr = typename right::pop_front::tail;
00772             using type = typename left::template concat<rr>;
00773         };
00774     }  // namespace internal
00775
00778     template <typename... Ts>
00779     struct type_list {
00780      private:
00781         template <typename T>
00782         struct concat_h;
00783
00784         template <typename... Us>
00785         struct concat_h<type_list<Us...>> {
00786             using type = type_list<Ts..., Us...>;
00787         };
00788
00789      public:
00791         static constexpr size_t length = sizeof...(Ts);
00792
00795         template <typename T>
00796         using push_front = type_list<T, Ts...>;
00797
00800         template <size_t index>
00801         using at = internal::type_at_t<index, Ts...>;
00802
00804         struct pop_front {
00806             using type = typename internal::pop_front_h<Ts...>::head;
00808             using tail = typename internal::pop_front_h<Ts...>::tail;
```

```
00809         };
00810
00813         template <typename T>
00814         using push_back = type_list<Ts..., T>;
00815
00818         template <typename U>
00819         using concat = typename concat_h<U>::type;
00820
00823         template <size_t index>
00824         struct split {
00825          private:
00826             using inner = internal::split_h<index, type_list<>, type_list<Ts...»;
00827
00828          public:
00829             using head = typename inner::head;
00830             using tail = typename inner::tail;
00831         };
00832
00836         template <typename T, size_t index>
00837         using insert = typename internal::insert_h<index, type_list<Ts...>, T>::type;
00838
00841         template <size_t index>
00842         using remove = typename internal::remove_h<index, type_list<Ts...»::type;
00843     };
00844
00846     template <>
00847     struct type_list<> {
00848         static constexpr size_t length = 0;
00849
00850         template <typename T>
00851         using push_front = type_list<T>;
00852
00853         template <typename T>
00854         using push_back = type_list<T>;
00855
00856         template <typename U>
00857         using concat = U;
00858
00859         // TODO(jewave): assert index == 0
00860         template <typename T, size_t index>
00861         using insert = type_list<T>;
00862     };
00863 }  // namespace aerobus
00864
00865 // i16
00866 #ifdef WITH_CUDA_FP16
00867 // i16
00868 namespace aerobus {
00870     struct i16 {
00871         using inner_type = int16_t;
00874         template<int16_t x>
00875         struct val {
00877             using enclosing_type = i16;
00879             static constexpr int16_t v = x;
00880
00883             template<typename valueType>
00884             static constexpr INLINED DEVICE valueType get() {
00885                 return internal::template int16_convert_helper<valueType, x>::value();
00886             }
00887
00889             using is_zero_t = std::bool_constant<x == 0>;
00890
00892             static std::string to_string() {
00893                 return std::to_string(x);
00894             }
00895         };
00896
00898         using zero = val<0>;
00900         using one = val<1>;
00902         static constexpr bool is_field = false;
00904         static constexpr bool is_euclidean_domain = true;
00907         template<auto x>
00908         using inject_constant_t = val<static_cast<int16_t>(x)>;
00909
00910         template<typename v>
00911         using inject_ring_t = v;
00912
00913      private:
00914         template<typename v1, typename v2>
00915         struct add {
00916             using type = val<v1::v + v2::v>;
00917         };
00918
00919         template<typename v1, typename v2>
00920         struct sub {
00921             using type = val<v1::v - v2::v>;
00922         };
```

```
00923
00924         template<typename v1, typename v2>
00925         struct mul {
00926             using type = val<v1::v* v2::v>;
00927         };
00928
00929         template<typename v1, typename v2>
00930         struct div {
00931             using type = val<v1::v / v2::v>;
00932         };
00933
00934         template<typename v1, typename v2>
00935         struct remainder {
00936             using type = val<v1::v % v2::v>;
00937         };
00938
00939         template<typename v1, typename v2>
00940         struct gt {
00941             using type = std::conditional_t<(v1::v > v2::v), std::true_type, std::false_type>;
00942         };
00943
00944         template<typename v1, typename v2>
00945         struct lt {
00946             using type = std::conditional_t<(v1::v < v2::v), std::true_type, std::false_type>;
00947         };
00948
00949         template<typename v1, typename v2>
00950         struct eq {
00951             using type = std::conditional_t<(v1::v == v2::v), std::true_type, std::false_type>;
00952         };
00953
00954         template<typename v1>
00955         struct pos {
00956             using type = std::bool_constant<(v1::v > 0)>;
00957         };
00958
00959     public:
00964         template<typename v1, typename v2>
00965         using add_t = typename add<v1, v2>::type;
00966
00971         template<typename v1, typename v2>
00972         using sub_t = typename sub<v1, v2>::type;
00973
00978         template<typename v1, typename v2>
00979         using mul_t = typename mul<v1, v2>::type;
00980
00985         template<typename v1, typename v2>
00986         using div_t = typename div<v1, v2>::type;
00987
00992         template<typename v1, typename v2>
00993         using mod_t = typename remainder<v1, v2>::type;
00994
00999         template<typename v1, typename v2>
01000         using gt_t = typename gt<v1, v2>::type;
01001
01006         template<typename v1, typename v2>
01007         using lt_t = typename lt<v1, v2>::type;
01008
01013         template<typename v1, typename v2>
01014         using eq_t = typename eq<v1, v2>::type;
01015
01019         template<typename v1, typename v2>
01020         static constexpr bool eq_v = eq_t<v1, v2>::value;
01021
01026         template<typename v1, typename v2>
01027         using gcd_t = gcd_t<i16, v1, v2>;
01028
01032         template<typename v>
01033         using pos_t = typename pos<v>::type;
01034
01038         template<typename v>
01039         static constexpr bool pos_v = pos_t<v>::value;
01040     };
01041 }  // namespace aerobus
01042 #endif
01043
01044 // i32
01045 namespace aerobus {
01047     struct i32 {
01048         using inner_type = int32_t;
01051         template<int32_t x>
01052         struct val {
01054             using enclosing_type = i32;
01056             static constexpr int32_t v = x;
01057
01060             template<typename valueType>
01061             static constexpr DEVICE valueType get() {
```

```
01062                 return static_cast<valueType>(x);
01063             }
01064
01066             using is_zero_t = std::bool_constant<x == 0>;
01067
01069             static std::string to_string() {
01070                 return std::to_string(x);
01071             }
01072         };
01073
01075         using zero = val<0>;
01077         using one = val<1>;
01079         static constexpr bool is_field = false;
01081         static constexpr bool is_euclidean_domain = true;
01084         template<auto x>
01085         using inject_constant_t = val<static_cast<int32_t>(x)>;
01086
01087         template<typename v>
01088         using inject_ring_t = v;
01089
01090     private:
01091         template<typename v1, typename v2>
01092         struct add {
01093             using type = val<v1::v + v2::v>;
01094         };
01095
01096         template<typename v1, typename v2>
01097         struct sub {
01098             using type = val<v1::v - v2::v>;
01099         };
01100
01101         template<typename v1, typename v2>
01102         struct mul {
01103             using type = val<v1::v* v2::v>;
01104         };
01105
01106         template<typename v1, typename v2>
01107         struct div {
01108             using type = val<v1::v / v2::v>;
01109         };
01110
01111         template<typename v1, typename v2>
01112         struct remainder {
01113             using type = val<v1::v % v2::v>;
01114         };
01115
01116         template<typename v1, typename v2>
01117         struct gt {
01118             using type = std::conditional_t<(v1::v > v2::v), std::true_type, std::false_type>;
01119         };
01120
01121         template<typename v1, typename v2>
01122         struct lt {
01123             using type = std::conditional_t<(v1::v < v2::v), std::true_type, std::false_type>;
01124         };
01125
01126         template<typename v1, typename v2>
01127         struct eq {
01128             using type = std::conditional_t<(v1::v == v2::v), std::true_type, std::false_type>;
01129         };
01130
01131         template<typename v1>
01132         struct pos {
01133             using type = std::bool_constant<(v1::v > 0)>;
01134         };
01135
01136     public:
01141         template<typename v1, typename v2>
01142         using add_t = typename add<v1, v2>::type;
01143
01148         template<typename v1, typename v2>
01149         using sub_t = typename sub<v1, v2>::type;
01150
01155         template<typename v1, typename v2>
01156         using mul_t = typename mul<v1, v2>::type;
01157
01162         template<typename v1, typename v2>
01163         using div_t = typename div<v1, v2>::type;
01164
01169         template<typename v1, typename v2>
01170         using mod_t = typename remainder<v1, v2>::type;
01171
01176         template<typename v1, typename v2>
01177         using gt_t = typename gt<v1, v2>::type;
01178
01183         template<typename v1, typename v2>
01184         using lt_t = typename lt<v1, v2>::type;
```

```
01185
01190         template<typename v1, typename v2>
01191         using eq_t = typename eq<v1, v2>::type;
01192
01196         template<typename v1, typename v2>
01197         static constexpr bool eq_v = eq_t<v1, v2>::value;
01198
01203         template<typename v1, typename v2>
01204         using gcd_t = gcd_t<i32, v1, v2>;
01205
01209         template<typename v>
01210         using pos_t = typename pos<v>::type;
01211
01215         template<typename v>
01216         static constexpr bool pos_v = pos_t<v>::value;
01217     };
01218 }  // namespace aerobus
01219
01220 // i64
01221 namespace aerobus {
01223     struct i64 {
01225         using inner_type = int64_t;
01228         template<int64_t x>
01229         struct val {
01231             using inner_type = int32_t;
01233             using enclosing_type = i64;
01235             static constexpr int64_t v = x;
01236
01239             template<typename valueType>
01240             static constexpr INLINED DEVICE valueType get() {
01241                 return static_cast<valueType>(x);
01242             }
01243
01245             using is_zero_t = std::bool_constant<x == 0>;
01246
01248             static std::string to_string() {
01249                 return std::to_string(x);
01250             }
01251         };
01252
01255         template<auto x>
01256         using inject_constant_t = val<static_cast<int64_t>(x)>;
01257
01262         template<typename v>
01263         using inject_ring_t = v;
01264
01266         using zero = val<0>;
01268         using one = val<1>;
01270         static constexpr bool is_field = false;
01272         static constexpr bool is_euclidean_domain = true;
01273
01274      private:
01275         template<typename v1, typename v2>
01276         struct add {
01277             using type = val<v1::v + v2::v>;
01278         };
01279
01280         template<typename v1, typename v2>
01281         struct sub {
01282             using type = val<v1::v - v2::v>;
01283         };
01284
01285         template<typename v1, typename v2>
01286         struct mul {
01287             using type = val<v1::v* v2::v>;
01288         };
01289
01290         template<typename v1, typename v2>
01291         struct div {
01292             using type = val<v1::v / v2::v>;
01293         };
01294
01295         template<typename v1, typename v2>
01296         struct remainder {
01297             using type = val<v1::v% v2::v>;
01298         };
01299
01300         template<typename v1, typename v2>
01301         struct gt {
01302             using type = std::conditional_t<(v1::v > v2::v), std::true_type, std::false_type>;
01303         };
01304
01305         template<typename v1, typename v2>
01306         struct lt {
01307             using type = std::conditional_t<(v1::v < v2::v), std::true_type, std::false_type>;
01308         };
01309
```

```
01310         template<typename v1, typename v2>
01311         struct eq {
01312             using type = std::conditional_t<(v1::v == v2::v), std::true_type, std::false_type>;
01313         };
01314 
01315         template<typename v>
01316         struct pos {
01317             using type = std::bool_constant<(v::v > 0)>;
01318         };
01319 
01320      public:
01324         template<typename v1, typename v2>
01325         using add_t = typename add<v1, v2>::type;
01326 
01330         template<typename v1, typename v2>
01331         using sub_t = typename sub<v1, v2>::type;
01332 
01336         template<typename v1, typename v2>
01337         using mul_t = typename mul<v1, v2>::type;
01338 
01343         template<typename v1, typename v2>
01344         using div_t = typename div<v1, v2>::type;
01345 
01349         template<typename v1, typename v2>
01350         using mod_t = typename remainder<v1, v2>::type;
01351 
01356         template<typename v1, typename v2>
01357         using gt_t = typename gt<v1, v2>::type;
01358 
01363         template<typename v1, typename v2>
01364         static constexpr bool gt_v = gt_t<v1, v2>::value;
01365 
01370         template<typename v1, typename v2>
01371         using lt_t = typename lt<v1, v2>::type;
01372 
01377         template<typename v1, typename v2>
01378         static constexpr bool lt_v = lt_t<v1, v2>::value;
01379 
01384         template<typename v1, typename v2>
01385         using eq_t = typename eq<v1, v2>::type;
01386 
01391         template<typename v1, typename v2>
01392         static constexpr bool eq_v = eq_t<v1, v2>::value;
01393 
01398         template<typename v1, typename v2>
01399         using gcd_t = gcd_t<i64, v1, v2>;
01400 
01404         template<typename v>
01405         using pos_t = typename pos<v>::type;
01406 
01410         template<typename v>
01411         static constexpr bool pos_v = pos_t<v>::value;
01412     };
01413 
01415     template<>
01416     struct Embed<i32, i64> {
01419         template<typename val>
01420         using type = i64::val<static_cast<int64_t>(val::v)>;
01421     };
01422 }  // namespace aerobus
01423 
01424 // z/pz
01425 namespace aerobus {
01431     template<int32_t p>
01432     struct zpz {
01434         using inner_type = int32_t;
01435 
01438         template<int32_t x>
01439         struct val {
01441             using enclosing_type = zpz<p>;
01443             static constexpr int32_t v = x % p;
01444 
01447             template<typename valueType>
01448             static constexpr INLINED DEVICE valueType get() {
01449                 return static_cast<valueType>(x % p);
01450             }
01451 
01453             using is_zero_t = std::bool_constant<v == 0>;
01454 
01456             static constexpr bool is_zero_v = v == 0;
01457 
01460             static std::string to_string() {
01461                 return std::to_string(x % p);
01462             }
01463         };
01464 
01467         template<auto x>
```

```
01468         using inject_constant_t = val<static_cast<int32_t>(x)>;
01469
01471         using zero = val<0>;
01472
01474         using one = val<1>;
01475
01477         static constexpr bool is_field = is_prime<p>::value;
01478
01480         static constexpr bool is_euclidean_domain = true;
01481
01482     private:
01483         template<typename v1, typename v2>
01484         struct add {
01485             using type = val<(v1::v + v2::v) % p>;
01486         };
01487
01488         template<typename v1, typename v2>
01489         struct sub {
01490             using type = val<(v1::v - v2::v) % p>;
01491         };
01492
01493         template<typename v1, typename v2>
01494         struct mul {
01495             using type = val<(v1::v* v2::v) % p>;
01496         };
01497
01498         template<typename v1, typename v2>
01499         struct div {
01500             using type = val<(v1::v% p) / (v2::v % p)>;
01501         };
01502
01503         template<typename v1, typename v2>
01504         struct remainder {
01505             using type = val<(v1::v% v2::v) % p>;
01506         };
01507
01508         template<typename v1, typename v2>
01509         struct gt {
01510             using type = std::conditional_t<(v1::v% p > v2::v% p), std::true_type, std::false_type>;
01511         };
01512
01513         template<typename v1, typename v2>
01514         struct lt {
01515             using type = std::conditional_t<(v1::v% p < v2::v% p), std::true_type, std::false_type>;
01516         };
01517
01518         template<typename v1, typename v2>
01519         struct eq {
01520             using type = std::conditional_t<(v1::v% p == v2::v % p), std::true_type, std::false_type>;
01521         };
01522
01523         template<typename v1>
01524         struct pos {
01525             using type = std::bool_constant<(v1::v > 0)>;
01526         };
01527
01528     public:
01532         template<typename v1, typename v2>
01533         using add_t = typename add<v1, v2>::type;
01534
01538         template<typename v1, typename v2>
01539         using sub_t = typename sub<v1, v2>::type;
01540
01544         template<typename v1, typename v2>
01545         using mul_t = typename mul<v1, v2>::type;
01546
01550         template<typename v1, typename v2>
01551         using div_t = typename div<v1, v2>::type;
01552
01556         template<typename v1, typename v2>
01557         using mod_t = typename remainder<v1, v2>::type;
01558
01562         template<typename v1, typename v2>
01563         using gt_t = typename gt<v1, v2>::type;
01564
01568         template<typename v1, typename v2>
01569         static constexpr bool gt_v = gt_t<v1, v2>::value;
01570
01574         template<typename v1, typename v2>
01575         using lt_t = typename lt<v1, v2>::type;
01576
01580         template<typename v1, typename v2>
01581         static constexpr bool lt_v = lt_t<v1, v2>::value;
01582
01586         template<typename v1, typename v2>
01587         using eq_t = typename eq<v1, v2>::type;
01588
```

```
01592         template<typename v1, typename v2>
01593         static constexpr bool eq_v = eq_t<v1, v2>::value;
01594
01598         template<typename v1, typename v2>
01599         using gcd_t = gcd_t<i32, v1, v2>;
01600
01603         template<typename v1>
01604         using pos_t = typename pos<v1>::type;
01605
01608         template<typename v>
01609         static constexpr bool pos_v = pos_t<v>::value;
01610     };
01611
01614     template<int32_t x>
01615     struct Embed<zpz<x>, i32> {
01618         template <typename val>
01619         using type = i32::val<val::v>;
01620     };
01621 }  // namespace aerobus
01622
01623 // polynomial
01624 namespace aerobus {
01625     // coeffN x^N + ...
01630     template<typename Ring>
01631     requires IsEuclideanDomain<Ring>
01632     struct polynomial {
01633         static constexpr bool is_field = false;
01634         static constexpr bool is_euclidean_domain = Ring::is_euclidean_domain;
01635
01638         template<typename P>
01639         struct horner_reduction_t {
01640             template<size_t index, size_t stop>
01641             struct inner {
01642                 template<typename accum, typename x>
01643                 using type = typename horner_reduction_t<P>::template inner<index + 1, stop>
01644                     ::template type<
01645                         typename Ring::template add_t<
01646                             typename Ring::template mul_t<x, accum>,
01647                             typename P::template coeff_at_t<P::degree - index>
01648                         >, x>;
01649             };
01650
01651             template<size_t stop>
01652             struct inner<stop, stop> {
01653                 template<typename accum, typename x>
01654                 using type = accum;
01655             };
01656         };
01657
01661         template<typename coeffN, typename... coeffs>
01662         struct val {
01664             using ring_type = Ring;
01666             using enclosing_type = polynomial<Ring>;
01668             static constexpr size_t degree = sizeof...(coeffs);
01670             using aN = coeffN;
01672             using strip = val<coeffs...>;
01674             using is_zero_t = std::bool_constant<(degree == 0) && (aN::is_zero_t::value)>;
01676             static constexpr bool is_zero_v = is_zero_t::value;
01677
01678          private:
01679             template<size_t index, typename E = void>
01680             struct coeff_at {};
01681
01682             template<size_t index>
01683             struct coeff_at<index, std::enable_if_t<(index >= 0 && index <= sizeof...(coeffs))>> {
01684                 using type = internal::type_at_t<sizeof...(coeffs) - index, coeffN, coeffs...>;
01685             };
01686
01687             template<size_t index>
01688             struct coeff_at<index, std::enable_if_t<(index < 0 || index > sizeof...(coeffs))>> {
01689                 using type = typename Ring::zero;
01690             };
01691
01692          public:
01695             template<size_t index>
01696             using coeff_at_t = typename coeff_at<index>::type;
01697
01700             static std::string to_string() {
01701                 return string_helper<coeffN, coeffs...>::func();
01702             }
01703
01708             template<typename arithmeticType>
01709             static constexpr DEVICE INLINED arithmeticType eval(const arithmeticType& x) {
01710                 #ifdef WITH_CUDA_FP16
01711                 arithmeticType start;
01712                 if constexpr (std::is_same_v<arithmeticType, __half2>) {
01713                     start = __half2(0, 0);
```

```
01714                 } else {
01715                     start = static_cast<arithmeticType>(0);
01716                 }
01717                 #else
01718                 arithmeticType start = static_cast<arithmeticType>(0);
01719                 #endif
01720                 return horner_evaluation<arithmeticType, val>
01721                         ::template inner<0, degree + 1>
01722                         ::func(start, x);
01723             }
01724
01737             template<typename arithmeticType>
01738             static DEVICE INLINED arithmeticType compensated_eval(const arithmeticType& x) {
01739                 return compensated_horner<arithmeticType, val>::func(x);
01740             }
01741
01742             template<typename x>
01743             using value_at_t = horner_reduction_t<val>
01744                 ::template inner<0, degree + 1>
01745                 ::template type<typename Ring::zero, x>;
01746         };
01747
01750         template<typename coeffN>
01751         struct val<coeffN> {
01753             using ring_type = Ring;
01755             using enclosing_type = polynomial<Ring>;
01757             static constexpr size_t degree = 0;
01758             using aN = coeffN;
01759             using strip = val<coeffN>;
01760             using is_zero_t = std::bool_constant<aN::is_zero_t::value>;
01761
01762             static constexpr bool is_zero_v = is_zero_t::value;
01763
01764             template<size_t index, typename E = void>
01765             struct coeff_at {};
01766
01767             template<size_t index>
01768             struct coeff_at<index, std::enable_if_t<(index == 0)» {
01769                 using type = aN;
01770             };
01771
01772             template<size_t index>
01773             struct coeff_at<index, std::enable_if_t<(index < 0 || index > 0)» {
01774                 using type = typename Ring::zero;
01775             };
01776
01777             template<size_t index>
01778             using coeff_at_t = typename coeff_at<index>::type;
01779
01780             static std::string to_string() {
01781                 return string_helper<coeffN>::func();
01782             }
01783
01784             template<typename arithmeticType>
01785             static constexpr DEVICE INLINED arithmeticType eval(const arithmeticType& x) {
01786                 return coeffN::template get<arithmeticType>();
01787             }
01788
01789             template<typename arithmeticType>
01790             static DEVICE INLINED arithmeticType compensated_eval(const arithmeticType& x) {
01791                 return coeffN::template get<arithmeticType>();
01792             }
01793
01794             template<typename x>
01795             using value_at_t = coeffN;
01796         };
01797
01799         using zero = val<typename Ring::zero>;
01801         using one = val<typename Ring::one>;
01803         using X = val<typename Ring::one, typename Ring::zero>;
01804
01805     private:
01806         template<typename P, typename E = void>
01807         struct simplify;
01808
01809         template <typename P1, typename P2, typename I>
01810         struct add_low;
01811
01812         template<typename P1, typename P2>
01813         struct add {
01814             using type = typename simplify<typename add_low<
01815             P1,
01816             P2,
01817             internal::make_index_sequence_reverse<
01818             std::max(P1::degree, P2::degree) + 1
01819             »::type>::type;
01820         };
```

```
01821
01822         template <typename P1, typename P2, typename I>
01823         struct sub_low;
01824
01825         template <typename P1, typename P2, typename I>
01826         struct mul_low;
01827
01828         template<typename v1, typename v2>
01829         struct mul {
01830                 using type = typename mul_low<
01831                     v1,
01832                     v2,
01833                     internal::make_index_sequence_reverse<
01834                     v1::degree + v2::degree + 1
01835                     »::type;
01836         };
01837
01838         template<typename coeff, size_t deg>
01839         struct monomial;
01840
01841         template<typename v, typename E = void>
01842         struct derive_helper {};
01843
01844         template<typename v>
01845         struct derive_helper<v, std::enable_if_t<v::degree == 0» {
01846             using type = zero;
01847         };
01848
01849         template<typename v>
01850         struct derive_helper<v, std::enable_if_t<v::degree != 0» {
01851             using type = typename add<
01852                 typename derive_helper<typename simplify<typename v::strip>::type>::type,
01853                 typename monomial<
01854                     typename Ring::template mul_t<
01855                         typename v::aN,
01856                         typename Ring::template inject_constant_t<(v::degree)>
01857                     >,
01858                     v::degree - 1
01859                 >::type
01860             >::type;
01861         };
01862
01863         template<typename v1, typename v2, typename E = void>
01864         struct eq_helper {};
01865
01866         template<typename v1, typename v2>
01867         struct eq_helper<v1, v2, std::enable_if_t<v1::degree != v2::degree» {
01868             using type = std::false_type;
01869         };
01870
01871
01872         template<typename v1, typename v2>
01873         struct eq_helper<v1, v2, std::enable_if_t<
01874             v1::degree == v2::degree &&
01875             (v1::degree != 0 || v2::degree != 0) &&
01876             std::is_same<
01877             typename Ring::template eq_t<typename v1::aN, typename v2::aN>,
01878             std::false_type
01879             >::value
01880         >
01881         > {
01882             using type = std::false_type;
01883         };
01884
01885         template<typename v1, typename v2>
01886         struct eq_helper<v1, v2, std::enable_if_t<
01887             v1::degree == v2::degree &&
01888             (v1::degree != 0 || v2::degree != 0) &&
01889             std::is_same<
01890             typename Ring::template eq_t<typename v1::aN, typename v2::aN>,
01891             std::true_type
01892             >::value
01893         » {
01894             using type = typename eq_helper<typename v1::strip, typename v2::strip>::type;
01895         };
01896
01897         template<typename v1, typename v2>
01898         struct eq_helper<v1, v2, std::enable_if_t<
01899             v1::degree == v2::degree &&
01900             (v1::degree == 0)
01901         » {
01902             using type = typename Ring::template eq_t<typename v1::aN, typename v2::aN>;
01903         };
01904
01905         template<typename v1, typename v2, typename E = void>
01906         struct lt_helper {};
01907
```

```
01908         template<typename v1, typename v2>
01909         struct lt_helper<v1, v2, std::enable_if_t<(v1::degree < v2::degree)» {
01910             using type = std::true_type;
01911         };
01912
01913         template<typename v1, typename v2>
01914         struct lt_helper<v1, v2, std::enable_if_t<(v1::degree == v2::degree)» {
01915             using type = typename Ring::template lt_t<typename v1::aN, typename v2::aN>;
01916         };
01917
01918         template<typename v1, typename v2>
01919         struct lt_helper<v1, v2, std::enable_if_t<(v1::degree > v2::degree)» {
01920             using type = std::false_type;
01921         };
01922
01923         template<typename v1, typename v2, typename E = void>
01924         struct gt_helper {};
01925
01926         template<typename v1, typename v2>
01927         struct gt_helper<v1, v2, std::enable_if_t<(v1::degree > v2::degree)» {
01928             using type = std::true_type;
01929         };
01930
01931         template<typename v1, typename v2>
01932         struct gt_helper<v1, v2, std::enable_if_t<(v1::degree == v2::degree)» {
01933             using type = std::false_type;
01934         };
01935
01936         template<typename v1, typename v2>
01937         struct gt_helper<v1, v2, std::enable_if_t<(v1::degree < v2::degree)» {
01938             using type = std::false_type;
01939         };
01940
01941         // when high power is zero : strip
01942         template<typename P>
01943         struct simplify<P, std::enable_if_t<
01944             std::is_same<
01945             typename Ring::zero,
01946             typename P::aN
01947             >::value && (P::degree > 0)
01948         » {
01949             using type = typename simplify<typename P::strip>::type;
01950         };
01951
01952         // otherwise : do nothing
01953         template<typename P>
01954         struct simplify<P, std::enable_if_t<
01955             !std::is_same<
01956             typename Ring::zero,
01957             typename P::aN
01958             >::value && (P::degree > 0)
01959         » {
01960             using type = P;
01961         };
01962
01963         // do not simplify constants
01964         template<typename P>
01965         struct simplify<P, std::enable_if_t<P::degree == 0» {
01966             using type = P;
01967         };
01968
01969         // addition at
01970         template<typename P1, typename P2, size_t index>
01971         struct add_at {
01972             using type =
01973                 typename Ring::template add_t<
01974                     typename P1::template coeff_at_t<index>,
01975                     typename P2::template coeff_at_t<index»;
01976         };
01977
01978         template<typename P1, typename P2, size_t index>
01979         using add_at_t = typename add_at<P1, P2, index>::type;
01980
01981         template<typename P1, typename P2, std::size_t... I>
01982         struct add_low<P1, P2, std::index_sequence<I...» {
01983             using type = val<add_at_t<P1, P2, I>...>;
01984         };
01985
01986         // substraction at
01987         template<typename P1, typename P2, size_t index>
01988         struct sub_at {
01989             using type =
01990                 typename Ring::template sub_t<
01991                     typename P1::template coeff_at_t<index>,
01992                     typename P2::template coeff_at_t<index»;
01993         };
01994
```

```
01995         template<typename P1, typename P2, size_t index>
01996         using sub_at_t = typename sub_at<P1, P2, index>::type;
01997 
01998         template<typename P1, typename P2, std::size_t... I>
01999         struct sub_low<P1, P2, std::index_sequence<I...>> {
02000             using type = val<sub_at_t<P1, P2, I>...>;
02001         };
02002 
02003         template<typename P1, typename P2>
02004         struct sub {
02005             using type = typename simplify<typename sub_low<
02006             P1,
02007             P2,
02008             internal::make_index_sequence_reverse<
02009             std::max(P1::degree, P2::degree) + 1
02010             >::type>::type;
02011         };
02012 
02013         // multiplication at
02014         template<typename v1, typename v2, size_t k, size_t index, size_t stop>
02015         struct mul_at_loop_helper {
02016             using type = typename Ring::template add_t<
02017                 typename Ring::template mul_t<
02018                 typename v1::template coeff_at_t<index>,
02019                 typename v2::template coeff_at_t<k - index>
02020                 >,
02021                 typename mul_at_loop_helper<v1, v2, k, index + 1, stop>::type
02022             >;
02023         };
02024 
02025         template<typename v1, typename v2, size_t k, size_t stop>
02026         struct mul_at_loop_helper<v1, v2, k, stop, stop> {
02027             using type = typename Ring::template mul_t<
02028                 typename v1::template coeff_at_t<stop>,
02029                 typename v2::template coeff_at_t<0>>;
02030         };
02031 
02032         template <typename v1, typename v2, size_t k, typename E = void>
02033         struct mul_at {};
02034 
02035         template<typename v1, typename v2, size_t k>
02036         struct mul_at<v1, v2, k, std::enable_if_t<(k < 0) || (k > v1::degree + v2::degree)>> {
02037             using type = typename Ring::zero;
02038         };
02039 
02040         template<typename v1, typename v2, size_t k>
02041         struct mul_at<v1, v2, k, std::enable_if_t<(k >= 0) && (k <= v1::degree + v2::degree)>> {
02042             using type = typename mul_at_loop_helper<v1, v2, k, 0, k>::type;
02043         };
02044 
02045         template<typename P1, typename P2, size_t index>
02046         using mul_at_t = typename mul_at<P1, P2, index>::type;
02047 
02048         template<typename P1, typename P2, std::size_t... I>
02049         struct mul_low<P1, P2, std::index_sequence<I...>> {
02050             using type = val<mul_at_t<P1, P2, I>...>;
02051         };
02052 
02053         // division helper
02054         template< typename A, typename B, typename Q, typename R, typename E = void>
02055         struct div_helper {};
02056 
02057         template<typename A, typename B, typename Q, typename R>
02058         struct div_helper<A, B, Q, R, std::enable_if_t<
02059             (R::degree < B::degree) ||
02060             (R::degree == 0 && std::is_same<typename R::aN, typename Ring::zero>::value)>> {
02061             using q_type = Q;
02062             using mod_type = R;
02063             using gcd_type = B;
02064         };
02065 
02066         template<typename A, typename B, typename Q, typename R>
02067         struct div_helper<A, B, Q, R, std::enable_if_t<
02068             (R::degree >= B::degree) &&
02069             !(R::degree == 0 && std::is_same<typename R::aN, typename Ring::zero>::value)>> {
02070          private: // NOLINT
02071             using rN = typename R::aN;
02072             using bN = typename B::aN;
02073             using pT = typename monomial<typename Ring::template div_t<rN, bN>, R::degree -
     B::degree>::type;
02074             using rr = typename sub<R, typename mul<pT, B>::type>::type;
02075             using qq = typename add<Q, pT>::type;
02076 
02077          public:
02078             using q_type = typename div_helper<A, B, qq, rr>::q_type;
02079             using mod_type = typename div_helper<A, B, qq, rr>::mod_type;
02080             using gcd_type = rr;
```

```
02081         };
02082
02083         template<typename A, typename B>
02084         struct div {
02085             static_assert(Ring::is_euclidean_domain, "cannot divide in that type of Ring");
02086             using q_type = typename div_helper<A, B, zero, A>::q_type;
02087             using m_type = typename div_helper<A, B, zero, A>::mod_type;
02088         };
02089
02090         template<typename P>
02091         struct make_unit {
02092             using type = typename div<P, val<typename P::aN>::q_type;
02093         };
02094
02095         template<typename coeff, size_t deg>
02096         struct monomial {
02097             using type = typename mul<X, typename monomial<coeff, deg - 1>::type>::type;
02098         };
02099
02100         template<typename coeff>
02101         struct monomial<coeff, 0> {
02102             using type = val<coeff>;
02103         };
02104
02105         template<typename arithmeticType, typename P>
02106         struct horner_evaluation {
02107             template<size_t index, size_t stop>
02108             struct inner {
02109                 static constexpr DEVICE INLINED arithmeticType func(
02110                     const arithmeticType& accum, const arithmeticType& x) {
02111                     return horner_evaluation<arithmeticType, P>::template inner<index + 1,
      stop>::func(
02112                         internal::fma_helper<arithmeticType>::eval(
02113                             x,
02114                             accum,
02115                             P::template coeff_at_t<P::degree - index>::template
      get<arithmeticType>()), x);
02116                 }
02117             };
02118
02119             template<size_t stop>
02120             struct inner<stop, stop> {
02121                 static constexpr DEVICE INLINED arithmeticType func(
02122                     const arithmeticType& accum, const arithmeticType& x) {
02123                     return accum;
02124                 }
02125             };
02126         };
02127
02128         template<typename arithmeticType, typename P>
02129         struct compensated_horner {
02130             template<int64_t index, int ghost>
02131             struct EFTHorner {
02132                 static INLINED void func(
02133                         arithmeticType x, arithmeticType *pi, arithmeticType *sigma, arithmeticType
      *r) {
02134                     arithmeticType p;
02135                     internal::two_prod(*r, x, &p, pi + P::degree - index - 1);
02136                     constexpr arithmeticType coeff = P::template coeff_at_t<index>::template
      get<arithmeticType>();
02137                     internal::two_sum<arithmeticType>(
02138                         p, coeff,
02139                         r, sigma + P::degree - index - 1);
02140                     EFTHorner<index - 1, ghost>::func(x, pi, sigma, r);
02141                 }
02142             };
02143
02144             template<int ghost>
02145             struct EFTHorner<-1, ghost> {
02146                 static INLINED DEVICE void func(
02147                         arithmeticType x, arithmeticType *pi, arithmeticType *sigma, arithmeticType
      *r) {
02148                 }
02149             };
02150
02151             static INLINED DEVICE arithmeticType func(arithmeticType x) {
02152                 arithmeticType pi[P::degree], sigma[P::degree];
02153                 arithmeticType r = P::template coeff_at_t<P::degree>::template get<arithmeticType>();
02154                 EFTHorner<P::degree - 1, 0>::func(x, pi, sigma, &r);
02155                 arithmeticType c = internal::horner<arithmeticType, P::degree - 1>(pi, sigma, x);
02156                 return r + c;
02157             }
02158         };
02159
02160         template<typename coeff, typename... coeffs>
02161         struct string_helper {
02162             static std::string func() {
```

```
02163                 std::string tail = string_helper<coeffs...>::func();
02164                 std::string result = "";
02165                 if (Ring::template eq_t<coeff, typename Ring::zero>::value) {
02166                     return tail;
02167                 } else if (Ring::template eq_t<coeff, typename Ring::one>::value) {
02168                     if (sizeof...(coeffs) == 1) {
02169                         result += "x";
02170                     } else {
02171                         result += "x^" + std::to_string(sizeof...(coeffs));
02172                     }
02173                 } else {
02174                     if (sizeof...(coeffs) == 1) {
02175                         result += coeff::to_string() + " x";
02176                     } else {
02177                         result += coeff::to_string()
02178                                 + " x^" + std::to_string(sizeof...(coeffs));
02179                     }
02180                 }
02181
02182                 if (!tail.empty()) {
02183                     if (tail.at(0) != '-') {
02184                         result += " + " + tail;
02185                     } else {
02186                         result += " - " + tail.substr(1);
02187                     }
02188                 }
02189
02190                 return result;
02191             }
02192         };
02193
02194         template<typename coeff>
02195         struct string_helper<coeff> {
02196             static std::string func() {
02197                 if (!std::is_same<coeff, typename Ring::zero>::value) {
02198                     return coeff::to_string();
02199                 } else {
02200                     return "";
02201                 }
02202             }
02203         };
02204
02205     public:
02208         template<typename P>
02209         using simplify_t = typename simplify<P>::type;
02210
02214         template<typename v1, typename v2>
02215         using add_t = typename add<v1, v2>::type;
02216
02220         template<typename v1, typename v2>
02221         using sub_t = typename sub<v1, v2>::type;
02222
02226         template<typename v1, typename v2>
02227         using mul_t = typename mul<v1, v2>::type;
02228
02232         template<typename v1, typename v2>
02233         using eq_t = typename eq_helper<v1, v2>::type;
02234
02238         template<typename v1, typename v2>
02239         using lt_t = typename lt_helper<v1, v2>::type;
02240
02244         template<typename v1, typename v2>
02245         using gt_t = typename gt_helper<v1, v2>::type;
02246
02250         template<typename v1, typename v2>
02251         using div_t = typename div<v1, v2>::q_type;
02252
02256         template<typename v1, typename v2>
02257         using mod_t = typename div_helper<v1, v2, zero, v1>::mod_type;
02258
02262         template<typename coeff, size_t deg>
02263         using monomial_t = typename monomial<coeff, deg>::type;
02264
02267         template<typename v>
02268         using derive_t = typename derive_helper<v>::type;
02269
02272         template<typename v>
02273         using pos_t = typename Ring::template pos_t<typename v::aN>;
02274
02277         template<typename v>
02278         static constexpr bool pos_v = pos_t<v>::value;
02279
02283         template<typename v1, typename v2>
02284         using gcd_t = std::conditional_t<
02285             Ring::is_euclidean_domain,
02286             typename make_unit<gcd_t<polynomial<Ring>, v1, v2»::type,
02287             void>;
```

```
02288
02291         template<auto x>
02292         using inject_constant_t = val<typename Ring::template inject_constant_t<x>>;
02293
02296         template<typename v>
02297         using inject_ring_t = val<v>;
02298     };
02299 }  // namespace aerobus
02300
02301 // fraction field
02302 namespace aerobus {
02303     namespace internal {
02304         template<typename Ring, typename E = void>
02305         requires IsEuclideanDomain<Ring>
02306         struct _FractionField {};
02307
02308         template<typename Ring>
02309         requires IsEuclideanDomain<Ring>
02310         struct _FractionField<Ring, std::enable_if_t<Ring::is_euclidean_domain» {
02312             static constexpr bool is_field = true;
02313             static constexpr bool is_euclidean_domain = true;
02314
02315          private:
02316             template<typename val1, typename val2, typename E = void>
02317             struct to_string_helper {};
02318
02319             template<typename val1, typename val2>
02320             struct to_string_helper <val1, val2,
02321                 std::enable_if_t<
02322                 Ring::template eq_t<
02323                 val2, typename Ring::one
02324                 >::value
02325                 >
02326             > {
02327                 static std::string func() {
02328                     return val1::to_string();
02329                 }
02330             };
02331
02332             template<typename val1, typename val2>
02333             struct to_string_helper<val1, val2,
02334                 std::enable_if_t<
02335                 !Ring::template eq_t<
02336                 val2,
02337                 typename Ring::one
02338                 >::value
02339                 >
02340             > {
02341                 static std::string func() {
02342                     return "(" + val1::to_string() + ") / (" + val2::to_string() + ")";
02343                 }
02344             };
02345
02346          public:
02350             template<typename val1, typename val2>
02351             struct val {
02353                 using x = val1;
02355                 using y = val2;
02357                 using is_zero_t = typename val1::is_zero_t;
02359                 static constexpr bool is_zero_v = val1::is_zero_t::value;
02360
02362                 using ring_type = Ring;
02363                 using enclosing_type = _FractionField<Ring>;
02364
02367                 static constexpr bool is_integer = std::is_same_v<val2, typename Ring::one>;
02368
02369                 template<typename valueType, int ghost = 0>
02370                 struct get_helper {
02371                     static constexpr INLINED DEVICE valueType get() {
02372                         return internal::staticcast<valueType, typename
      ring_type::inner_type>::template func<x::v>() /
02373                             internal::staticcast<valueType, typename ring_type::inner_type>::template
      func<y::v>();
02374                     }
02375                 };
02376
02377                 #ifdef WITH_CUDA_FP16
02378                 template<int ghost>
02379                 struct get_helper<__half, ghost> {
02380                     static constexpr INLINED DEVICE __half get() {
02381                         return internal::my_float2half_rn(
02382                             internal::staticcast<float, typename ring_type::inner_type>::template
      func<x::v>() /
02383                             internal::staticcast<float, typename ring_type::inner_type>::template
      func<y::v>());
02384                     }
02385                 };
```

```
02386
02387                 template<int ghost>
02388                 struct get_helper<__half2, ghost> {
02389                     static constexpr INLINED DEVICE __half2 get() {
02390                         constexpr __half tmp = internal::my_float2half_rn(
02391                             internal::staticcast<float, typename ring_type::inner_type>::template
    func<x::v>() /
02392                             internal::staticcast<float, typename ring_type::inner_type>::template
    func<y::v>());
02393                         return __half2(tmp, tmp);
02394                     }
02395                 };
02396                 #endif
02397
02401                 template<typename valueType>
02402                 static constexpr INLINED DEVICE valueType get() {
02403                     return get_helper<valueType, 0>::get();
02404                 }
02405
02408                 static std::string to_string() {
02409                     return to_string_helper<val1, val2>::func();
02410                 }
02411
02416                 template<typename arithmeticType>
02417                 static constexpr DEVICE INLINED arithmeticType eval(const arithmeticType& v) {
02418                     return x::eval(v) / y::eval(v);
02419                 }
02420             };
02421
02423             using zero = val<typename Ring::zero, typename Ring::one>;
02425             using one = val<typename Ring::one, typename Ring::one>;
02426
02429             template<typename v>
02430             using inject_t = val<v, typename Ring::one>;
02431
02434             template<auto x>
02435             using inject_constant_t = val<typename Ring::template inject_constant_t<x>, typename
    Ring::one>;
02436
02439             template<typename v>
02440             using inject_ring_t = val<typename Ring::template inject_ring_t<v>, typename Ring::one>;
02441
02443             using ring_type = Ring;
02444
02445         private:
02446             template<typename v, typename E = void>
02447             struct simplify {};
02448
02449             // x = 0
02450             template<typename v>
02451             struct simplify<v, std::enable_if_t<v::x::is_zero_t::value>> {
02452                 using type = typename _FractionField<Ring>::zero;
02453             };
02454
02455             // x != 0
02456             template<typename v>
02457             struct simplify<v, std::enable_if_t<!v::x::is_zero_t::value>> {
02458              private:
02459                 using _gcd = typename Ring::template gcd_t<typename v::x, typename v::y>;
02460                 using newx = typename Ring::template div_t<typename v::x, _gcd>;
02461                 using newy = typename Ring::template div_t<typename v::y, _gcd>;
02462
02463                 using posx = std::conditional_t<
02464                                 !Ring::template pos_v<newy>,
02465                                 typename Ring::template sub_t<typename Ring::zero, newx>,
02466                                 newx>;
02467                 using posy = std::conditional_t<
02468                                 !Ring::template pos_v<newy>,
02469                                 typename Ring::template sub_t<typename Ring::zero, newy>,
02470                                 newy>;
02471              public:
02472                 using type = typename _FractionField<Ring>::template val<posx, posy>;
02473             };
02474
02475         public:
02478             template<typename v>
02479             using simplify_t = typename simplify<v>::type;
02480
02481         private:
02482             template<typename v1, typename v2>
02483             struct add {
02484              private:
02485                 using a = typename Ring::template mul_t<typename v1::x, typename v2::y>;
02486                 using b = typename Ring::template mul_t<typename v1::y, typename v2::x>;
02487                 using dividend = typename Ring::template add_t<a, b>;
02488                 using diviser = typename Ring::template mul_t<typename v1::y, typename v2::y>;
02489                 using g = typename Ring::template gcd_t<dividend, diviser>;
```

```
02490
02491             public:
02492                using type = typename _FractionField<Ring>::template simplify_t<val<dividend,
      diviser»;
02493             };
02494
02495             template<typename v>
02496             struct pos {
02497                 using type = std::conditional_t<
02498                     (Ring::template pos_v<typename v::x> && Ring::template pos_v<typename v::y>) ||
02499                     (!Ring::template pos_v<typename v::x> && !Ring::template pos_v<typename v::y>),
02500                     std::true_type,
02501                     std::false_type>;
02502             };
02503
02504             template<typename v1, typename v2>
02505             struct sub {
02506              private:
02507                 using a = typename Ring::template mul_t<typename v1::x, typename v2::y>;
02508                 using b = typename Ring::template mul_t<typename v1::y, typename v2::x>;
02509                 using dividend = typename Ring::template sub_t<a, b>;
02510                 using diviser = typename Ring::template mul_t<typename v1::y, typename v2::y>;
02511                 using g = typename Ring::template gcd_t<dividend, diviser>;
02512
02513              public:
02514                 using type = typename _FractionField<Ring>::template simplify_t<val<dividend,
      diviser»;
02515             };
02516
02517             template<typename v1, typename v2>
02518             struct mul {
02519              private:
02520                 using a = typename Ring::template mul_t<typename v1::x, typename v2::x>;
02521                 using b = typename Ring::template mul_t<typename v1::y, typename v2::y>;
02522
02523              public:
02524                 using type = typename _FractionField<Ring>::template simplify_t<val<a, b»;
02525             };
02526
02527             template<typename v1, typename v2, typename E = void>
02528             struct div {};
02529
02530             template<typename v1, typename v2>
02531             struct div<v1, v2, std::enable_if_t<!std::is_same<v2, typename
      _FractionField<Ring>::zero>::value»  {
02532              private:
02533                 using a = typename Ring::template mul_t<typename v1::x, typename v2::y>;
02534                 using b = typename Ring::template mul_t<typename v1::y, typename v2::x>;
02535
02536              public:
02537                 using type = typename _FractionField<Ring>::template simplify_t<val<a, b»;
02538             };
02539
02540             template<typename v1, typename v2>
02541             struct div<v1, v2, std::enable_if_t<
02542                 std::is_same<zero, v1>::value && std::is_same<v2, zero>::value»  {
02543                 using type = one;
02544             };
02545
02546             template<typename v1, typename v2>
02547             struct eq {
02548                 using type = std::conditional_t<
02549                         std::is_same<typename simplify_t<v1>::x, typename simplify_t<v2>::x>::value &&
02550                         std::is_same<typename simplify_t<v1>::y, typename simplify_t<v2>::y>::value,
02551                     std::true_type,
02552                     std::false_type>;
02553             };
02554
02555             template<typename v1, typename v2, typename E = void>
02556             struct gt;
02557
02558             template<typename v1, typename v2>
02559             struct gt<v1, v2, std::enable_if_t<
02560                 (eq<v1, v2>::type::value)
02561                 » {
02562                 using type = std::false_type;
02563             };
02564
02565             template<typename v1, typename v2>
02566             struct gt<v1, v2, std::enable_if_t<
02567                 (!eq<v1, v2>::type::value) &&
02568                 (!pos<v1>::type::value) && (!pos<v2>::type::value)
02569                 » {
02570                 using type = typename gt<
02571                     typename sub<zero, v1>::type, typename sub<zero, v2>::type
02572                 >::type;
02573             };
```

```
02574
02575             template<typename v1, typename v2>
02576             struct gt<v1, v2, std::enable_if_t<
02577                 (!eq<v1, v2>::type::value) &&
02578                 (pos<v1>::type::value) && (!pos<v2>::type::value)
02579                 » {
02580                 using type = std::true_type;
02581             };
02582
02583             template<typename v1, typename v2>
02584             struct gt<v1, v2, std::enable_if_t<
02585                 (!eq<v1, v2>::type::value) &&
02586                 (!pos<v1>::type::value) && (pos<v2>::type::value)
02587                 » {
02588                 using type = std::false_type;
02589             };
02590
02591             template<typename v1, typename v2>
02592             struct gt<v1, v2, std::enable_if_t<
02593                 (!eq<v1, v2>::type::value) &&
02594                 (pos<v1>::type::value) && (pos<v2>::type::value)
02595                 » {
02596                 using type = typename Ring::template gt_t<
02597                     typename Ring::template mul_t<v1::x, v2::y>,
02598                     typename Ring::template mul_t<v2::y, v2::x>
02599                 >;
02600             };
02601
02602         public:
02606             template<typename v1, typename v2>
02607             using add_t = typename add<v1, v2>::type;
02608
02613             template<typename v1, typename v2>
02614             using mod_t = zero;
02615
02620             template<typename v1, typename v2>
02621             using gcd_t = v1;
02622
02626             template<typename v1, typename v2>
02627             using sub_t = typename sub<v1, v2>::type;
02628
02632             template<typename v1, typename v2>
02633             using mul_t = typename mul<v1, v2>::type;
02634
02638             template<typename v1, typename v2>
02639             using div_t = typename div<v1, v2>::type;
02640
02644             template<typename v1, typename v2>
02645             using eq_t = typename eq<v1, v2>::type;
02646
02650             template<typename v1, typename v2>
02651             static constexpr bool eq_v = eq<v1, v2>::type::value;
02652
02656             template<typename v1, typename v2>
02657             using gt_t = typename gt<v1, v2>::type;
02658
02662             template<typename v1, typename v2>
02663             static constexpr bool gt_v = gt<v1, v2>::type::value;
02664
02667             template<typename v1>
02668             using pos_t = typename pos<v1>::type;
02669
02672             template<typename v>
02673             static constexpr bool pos_v = pos_t<v>::value;
02674         };
02675
02676         template<typename Ring, typename E = void>
02677         requires IsEuclideanDomain<Ring>
02678         struct FractionFieldImpl {};
02679
02680         // fraction field of a field is the field itself
02681         template<typename Field>
02682         requires IsEuclideanDomain<Field>
02683         struct FractionFieldImpl<Field, std::enable_if_t<Field::is_field» {
02684             using type = Field;
02685             template<typename v>
02686             using inject_t = v;
02687         };
02688
02689         // fraction field of a ring is the actual fraction field
02690         template<typename Ring>
02691         requires IsEuclideanDomain<Ring>
02692         struct FractionFieldImpl<Ring, std::enable_if_t<!Ring::is_field» {
02693             using type = _FractionField<Ring>;
02694         };
02695     }  // namespace internal
02696
```

```
02699     template<typename Ring>
02700     requires IsEuclideanDomain<Ring>
02701     using FractionField = typename internal::FractionFieldImpl<Ring>::type;
02702
02705     template<typename Ring>
02706     struct Embed<Ring, FractionField<Ring>> {
02709         template<typename v>
02710         using type = typename FractionField<Ring>::template val<v, typename Ring::one>;
02711     };
02712 }  // namespace aerobus
02713
02714
02715 // short names for common types
02716 namespace aerobus {
02720     template<typename X, typename Y>
02721     requires IsRing<typename X::enclosing_type> &&
02722         (std::is_same_v<typename X::enclosing_type, typename Y::enclosing_type>)
02723     using add_t = typename X::enclosing_type::template add_t<X, Y>;
02724
02728     template<typename X, typename Y>
02729     requires IsRing<typename X::enclosing_type> &&
02730         (std::is_same_v<typename X::enclosing_type, typename Y::enclosing_type>)
02731     using sub_t = typename X::enclosing_type::template sub_t<X, Y>;
02732
02736     template<typename X, typename Y>
02737     requires IsRing<typename X::enclosing_type> &&
02738         (std::is_same_v<typename X::enclosing_type, typename Y::enclosing_type>)
02739     using mul_t = typename X::enclosing_type::template mul_t<X, Y>;
02740
02744     template<typename X, typename Y>
02745     requires IsEuclideanDomain<typename X::enclosing_type> &&
02746         (std::is_same_v<typename X::enclosing_type, typename Y::enclosing_type>)
02747     using div_t = typename X::enclosing_type::template div_t<X, Y>;
02748
02751     using q32 = FractionField<i32>;
02752
02755     using fpq32 = FractionField<polynomial<q32>>;
02756
02759     using q64 = FractionField<i64>;
02760
02762     using pi64 = polynomial<i64>;
02763
02765     using pq64 = polynomial<q64>;
02766
02768     using fpq64 = FractionField<polynomial<q64>>;
02769
02774     template<typename Ring, typename v1, typename v2>
02775     using makefraction_t = typename FractionField<Ring>::template val<v1, v2>;
02776
02783     template<typename v>
02784     using embed_int_poly_in_fractions_t =
02785             typename Embed<
02786                 polynomial<typename v::ring_type>,
02787                 polynomial<FractionField<typename v::ring_type>>::template type<v>;
02788
02792     template<int64_t p, int64_t q>
02793     using make_q64_t = typename q64::template simplify_t<
02794                 typename q64::val<i64::inject_constant_t<p>, i64::inject_constant_t<q>>;
02795
02799     template<int32_t p, int32_t q>
02800     using make_q32_t = typename q32::template simplify_t<
02801                 typename q32::val<i32::inject_constant_t<p>, i32::inject_constant_t<q>>;
02802
02803     #ifdef WITH_CUDA_FP16
02805     using q16 = FractionField<i16>;
02806
02810     template<int16_t p, int16_t q>
02811     using make_q16_t = typename q16::template simplify_t<
02812                 typename q16::val<i16::inject_constant_t<p>, i16::inject_constant_t<q>>;
02813
02814     #endif
02819     template<typename Ring, typename v1, typename v2>
02820     using addfractions_t = typename FractionField<Ring>::template add_t<v1, v2>;
02825     template<typename Ring, typename v1, typename v2>
02826     using mulfractions_t = typename FractionField<Ring>::template mul_t<v1, v2>;
02827
02829     template<>
02830     struct Embed<q32, q64> {
02833         template<typename v>
02834         using type = make_q64_t<static_cast<int64_t>(v::x::v), static_cast<int64_t>(v::y::v)>;
02835     };
02836
02840     template<typename Small, typename Large>
02841     struct Embed<polynomial<Small>, polynomial<Large>> {
02842      private:
02843         template<typename v, typename i>
02844         struct at_low;
```

```
02845
02846         template<typename v, size_t i>
02847         struct at_index {
02848             using type = typename Embed<Small, Large>::template
      type<typename v::template coeff_at_t<i>>;
02849         };
02850
02851         template<typename v, size_t... Is>
02852         struct at_low<v, std::index_sequence<Is...>> {
02853             using type = typename polynomial<Large>::template val<typename at_index<v, Is>::type...>;
02854         };
02855
02856      public:
02859         template<typename v>
02860         using type = typename at_low<v, typename internal::make_index_sequence_reverse<v::degree +
      1>::type;
02861     };
02862
02866     template<typename Ring, auto... xs>
02867     using make_int_polynomial_t = typename polynomial<Ring>::template val<
02868             typename Ring::template inject_constant_t<xs>...>;
02869
02873     template<typename Ring, auto... xs>
02874     using make_frac_polynomial_t = typename polynomial<FractionField<Ring>>::template val<
02875             typename FractionField<Ring>::template inject_constant_t<xs>...>;
02876 }  // namespace aerobus
02877
02878 // taylor series and common integers (factorial, bernoulli...) appearing in taylor coefficients
02879 namespace aerobus {
02880     namespace internal {
02881         template<typename T, size_t x, typename E = void>
02882         struct factorial {};
02883
02884         template<typename T, size_t x>
02885         struct factorial<T, x, std::enable_if_t<(x > 0)>> {
02886         private:
02887             template<typename, size_t, typename>
02888             friend struct factorial;
02889         public:
02890             using type = typename T::template mul_t<typename T::template val<x>, typename factorial<T,
      x - 1>::type>;
02891             static constexpr typename T::inner_type value = type::template get<typename
      T::inner_type>();
02892         };
02893
02894         template<typename T>
02895         struct factorial<T, 0> {
02896          public:
02897             using type = typename T::one;
02898             static constexpr typename T::inner_type value = type::template get<typename
      T::inner_type>();
02899         };
02900     }  // namespace internal
02901
02905     template<typename T, size_t i>
02906     using factorial_t = typename internal::factorial<T, i>::type;
02907
02911     template<typename T, size_t i>
02912     inline constexpr typename T::inner_type factorial_v = internal::factorial<T, i>::value;
02913
02914     namespace internal {
02915         template<typename T, size_t k, size_t n, typename E = void>
02916         struct combination_helper {};
02917
02918         template<typename T, size_t k, size_t n>
02919         struct combination_helper<T, k, n, std::enable_if_t<(n >= 0 && k <= (n / 2) && k > 0)>> {
02920             using type = typename FractionField<T>::template mul_t<
02921                 typename combination_helper<T, k - 1, n - 1>::type,
02922                 makefraction_t<T, typename T::template val<n>, typename T::template val<k>>>;
02923         };
02924
02925         template<typename T, size_t k, size_t n>
02926         struct combination_helper<T, k, n, std::enable_if_t<(n >= 0 && k > (n / 2) && k > 0)>> {
02927             using type = typename combination_helper<T, n - k, n>::type;
02928         };
02929
02930         template<typename T, size_t n>
02931         struct combination_helper<T, 0, n> {
02932             using type = typename FractionField<T>::one;
02933         };
02934
02935         template<typename T, size_t k, size_t n>
02936         struct combination {
02937             using type = typename internal::combination_helper<T, k, n>::type::x;
02938             static constexpr typename T::inner_type value =
02939                     internal::combination_helper<T, k, n>::type::template get<typename
      T::inner_type>();
```

```
02940         };
02941     }  // namespace internal
02942
02945     template<typename T, size_t k, size_t n>
02946     using combination_t = typename internal::combination<T, k, n>::type;
02947
02952     template<typename T, size_t k, size_t n>
02953     inline constexpr typename T::inner_type combination_v = internal::combination<T, k, n>::value;
02954
02955     namespace internal {
02956         template<typename T, size_t m>
02957         struct bernoulli;
02958
02959         template<typename T, typename accum, size_t k, size_t m>
02960         struct bernoulli_helper {
02961             using type = typename bernoulli_helper<
02962                 T,
02963                 addfractions_t<T,
02964                     accum,
02965                     mulfractions_t<T,
02966                         makefraction_t<T,
02967                             combination_t<T, k, m + 1>,
02968                             typename T::one>,
02969                         typename bernoulli<T, k>::type
02970                     >
02971                 >,
02972                 k + 1,
02973                 m>::type;
02974         };
02975
02976         template<typename T, typename accum, size_t m>
02977         struct bernoulli_helper<T, accum, m, m> {
02978             using type = accum;
02979         };
02980
02981
02982
02983         template<typename T, size_t m>
02984         struct bernoulli {
02985             using type = typename FractionField<T>::template mul_t<
02986                 typename internal::bernoulli_helper<T, typename FractionField<T>::zero, 0, m>::type,
02987                 makefraction_t<T,
02988                 typename T::template val<static_cast<typename T::inner_type>(-1)>,
02989                 typename T::template val<static_cast<typename T::inner_type>(m + 1)>
02990                 >
02991             >;
02992
02993             template<typename floatType>
02994             static constexpr floatType value = type::template get<floatType>();
02995         };
02996
02997         template<typename T>
02998         struct bernoulli<T, 0> {
02999             using type = typename FractionField<T>::one;
03000
03001             template<typename floatType>
03002             static constexpr floatType value = type::template get<floatType>();
03003         };
03004     }  // namespace internal
03005
03009     template<typename T, size_t n>
03010     using bernoulli_t = typename internal::bernoulli<T, n>::type;
03011
03016     template<typename FloatType, typename T, size_t n >
03017     inline constexpr FloatType bernoulli_v = internal::bernoulli<T, n>::template value<FloatType>;
03018
03019     // bell numbers
03020     namespace internal {
03021         template<typename T, size_t n, typename E = void>
03022         struct bell_helper;
03023
03024         template <typename T, size_t n>
03025         struct bell_helper<T, n, std::enable_if_t<(n > 1)» {
03026             template<typename accum, size_t i, size_t stop>
03027             struct sum_helper {
03028              private:
03029                 using left = typename T::template mul_t<
03030                             combination_t<T, i, n-1>,
03031                             typename bell_helper<T, i>::type>;
03032                 using new_accum = typename T::template add_t<accum, left>;
03033              public:
03034                 using type = typename sum_helper<new_accum, i+1, stop>::type;
03035             };
03036
03037             template<typename accum, size_t stop>
03038             struct sum_helper<accum, stop, stop> {
03039                 using type = accum;
```

```
03040             };
03041
03042             using type = typename sum_helper<typename T::zero, 0, n>::type;
03043         };
03044
03045         template<typename T>
03046         struct bell_helper<T, 0> {
03047             using type = typename T::one;
03048         };
03049
03050         template<typename T>
03051         struct bell_helper<T, 1> {
03052             using type = typename T::one;
03053         };
03054     }  // namespace internal
03055
03059     template<typename T, size_t n>
03060     using bell_t = typename internal::bell_helper<T, n>::type;
03061
03065     template<typename T, size_t n>
03066     static constexpr typename T::inner_type bell_v = bell_t<T, n>::v;
03067
03068     namespace internal {
03069         template<typename T, int k, typename E = void>
03070         struct alternate {};
03071
03072         template<typename T, int k>
03073         struct alternate<T, k, std::enable_if_t<k % 2 == 0>> {
03074             using type = typename T::one;
03075             static constexpr typename T::inner_type value = type::template get<typename
      T::inner_type>();
03076         };
03077
03078         template<typename T, int k>
03079         struct alternate<T, k, std::enable_if_t<k % 2 != 0>> {
03080             using type = typename T::template sub_t<typename T::zero, typename T::one>;
03081             static constexpr typename T::inner_type value = type::template get<typename
      T::inner_type>();
03082         };
03083     }  // namespace internal
03084
03087     template<typename T, int k>
03088     using alternate_t = typename internal::alternate<T, k>::type;
03089
03092     template<typename T, size_t k>
03093     inline constexpr typename T::inner_type alternate_v = internal::alternate<T, k>::value;
03094
03095     namespace internal {
03096         template<typename T, int n, int k, typename E = void>
03097         struct stirling_1_helper {};
03098
03099         template<typename T>
03100         struct stirling_1_helper<T, 0, 0> {
03101             using type = typename T::one;
03102         };
03103
03104         template<typename T, int n>
03105         struct stirling_1_helper<T, n, 0, std::enable_if_t<(n > 0)>> {
03106             using type = typename T::zero;
03107         };
03108
03109         template<typename T, int n>
03110         struct stirling_1_helper<T, 0, n, std::enable_if_t<(n > 0)>> {
03111             using type = typename T::zero;
03112         };
03113
03114         template<typename T, int n, int k>
03115         struct stirling_1_helper<T, n, k, std::enable_if_t<(k > 0) && (n > 0)>> {
03116             using type = typename T::template sub_t<
03117                             typename stirling_1_helper<T, n-1, k-1>::type,
03118                             typename T::template mul_t<
03119                                 typename T::template inject_constant_t<n-1>,
03120                                 typename stirling_1_helper<T, n-1, k>::type
03121                             >;
03122         };
03123     }  // namespace internal
03124
03129     template<typename T, int n, int k>
03130     using stirling_1_signed_t = typename internal::stirling_1_helper<T, n, k>::type;
03131
03136     template<typename T, int n, int k>
03137     using stirling_1_unsigned_t = abs_t<typename internal::stirling_1_helper<T, n, k>::type>;
03138
03143     template<typename T, int n, int k>
03144     static constexpr typename T::inner_type stirling_1_unsigned_v = stirling_1_unsigned_t<T, n, k>::v;
03145
03150     template<typename T, int n, int k>
```

```
03151     static constexpr typename T::inner_type stirling_1_signed_v = stirling_1_signed_t<T, n, k>::v;
03152
03153     namespace internal {
03154         template<typename T, int n, int k, typename E = void>
03155         struct stirling_2_helper {};
03156
03157         template<typename T, int n>
03158         struct stirling_2_helper<T, n, n, std::enable_if_t<(n >= 0)» {
03159             using type = typename T::one;
03160         };
03161
03162         template<typename T, int n>
03163         struct stirling_2_helper<T, n, 0, std::enable_if_t<(n > 0)» {
03164             using type = typename T::zero;
03165         };
03166
03167         template<typename T, int n>
03168         struct stirling_2_helper<T, 0, n, std::enable_if_t<(n > 0)» {
03169             using type = typename T::zero;
03170         };
03171
03172         template<typename T, int n, int k>
03173         struct stirling_2_helper<T, n, k, std::enable_if_t<(k > 0) && (n > 0) && (k < n)» {
03174             using type = typename T::template add_t<
03175                             typename stirling_2_helper<T, n-1, k-1>::type,
03176                             typename T::template mul_t<
03177                                 typename T::template inject_constant_t<k>,
03178                                 typename stirling_2_helper<T, n-1, k>::type
03179                             »;
03180         };
03181     }  // namespace internal
03182
03187     template<typename T, int n, int k>
03188     using stirling_2_t = typename internal::stirling_2_helper<T, n, k>::type;
03189
03194     template<typename T, int n, int k>
03195     static constexpr typename T::inner_type stirling_2_v = stirling_2_t<T, n, k>::v;
03196
03197     namespace internal {
03198         template<typename T>
03199         struct pow_scalar {
03200             template<size_t p>
03201             static constexpr DEVICE INLINED T func(const T& x) { return p == 0 ? static_cast<T>(1) :
03202                 p % 2 == 0 ? func<p/2>(x) * func<p/2>(x) :
03203                 x * func<p/2>(x) * func<p/2>(x);
03204             }
03205         };
03206
03207         template<typename T, typename p, size_t n, typename E = void>
03208         requires IsEuclideanDomain<T>
03209         struct pow;
03210
03211         template<typename T, typename p, size_t n>
03212         struct pow<T, p, n, std::enable_if_t<(n > 0 && n % 2 == 0)» {
03213             using type = typename T::template mul_t<
03214                 typename pow<T, p, n/2>::type,
03215                 typename pow<T, p, n/2>::type
03216             >;
03217         };
03218
03219         template<typename T, typename p, size_t n>
03220         struct pow<T, p, n, std::enable_if_t<(n % 2 == 1)» {
03221             using type = typename T::template mul_t<
03222                 p,
03223                 typename T::template mul_t<
03224                     typename pow<T, p, n/2>::type,
03225                     typename pow<T, p, n/2>::type
03226                 >
03227             >;
03228         };
03229
03230         template<typename T, typename p, size_t n>
03231         struct pow<T, p, n, std::enable_if_t<n == 0» { using type = typename T::one; };
03232     }  // namespace internal
03233
03238     template<typename T, typename p, size_t n>
03239     using pow_t = typename internal::pow<T, p, n>::type;
03240
03245     template<typename T, typename p, size_t n>
03246     static constexpr typename T::inner_type pow_v = internal::pow<T, p, n>::type::v;
03247
03248     template<typename T, size_t p>
03249     static constexpr DEVICE INLINED T pow_scalar(const T& x) { return
    internal::pow_scalar<T>::template func<p>(x); }
03250
03251     namespace internal {
03252         template<typename, template<typename, size_t> typename, class>
```

```
03253         struct make_taylor_impl;
03254
03255         template<typename T, template<typename, size_t> typename coeff_at, size_t... Is>
03256         struct make_taylor_impl<T, coeff_at, std::integer_sequence<size_t, Is...>> {
03257             using type = typename polynomial<FractionField<T>>::template val<typename coeff_at<T,
      Is>::type...>;
03258         };
03259     }
03260
03265     template<typename T, template<typename, size_t index> typename coeff_at, size_t deg>
03266     using taylor = typename internal::make_taylor_impl<
03267         T,
03268         coeff_at,
03269         internal::make_index_sequence_reverse<deg + 1>>::type;
03270
03271     namespace internal {
03272         template<typename T, size_t i>
03273         struct exp_coeff {
03274             using type = makefraction_t<T, typename T::one, factorial_t<T, i>>;
03275         };
03276
03277         template<typename T, size_t i, typename E = void>
03278         struct sin_coeff_helper {};
03279
03280         template<typename T, size_t i>
03281         struct sin_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03282             using type = typename FractionField<T>::zero;
03283         };
03284
03285         template<typename T, size_t i>
03286         struct sin_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03287             using type = makefraction_t<T, alternate_t<T, i / 2>, factorial_t<T, i>>;
03288         };
03289
03290         template<typename T, size_t i>
03291         struct sin_coeff {
03292             using type = typename sin_coeff_helper<T, i>::type;
03293         };
03294
03295         template<typename T, size_t i, typename E = void>
03296         struct sh_coeff_helper {};
03297
03298         template<typename T, size_t i>
03299         struct sh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03300             using type = typename FractionField<T>::zero;
03301         };
03302
03303         template<typename T, size_t i>
03304         struct sh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03305             using type = makefraction_t<T, typename T::one, factorial_t<T, i>>;
03306         };
03307
03308         template<typename T, size_t i>
03309         struct sh_coeff {
03310             using type = typename sh_coeff_helper<T, i>::type;
03311         };
03312
03313         template<typename T, size_t i, typename E = void>
03314         struct cos_coeff_helper {};
03315
03316         template<typename T, size_t i>
03317         struct cos_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03318             using type = typename FractionField<T>::zero;
03319         };
03320
03321         template<typename T, size_t i>
03322         struct cos_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03323             using type = makefraction_t<T, alternate_t<T, i / 2>, factorial_t<T, i>>;
03324         };
03325
03326         template<typename T, size_t i>
03327         struct cos_coeff {
03328             using type = typename cos_coeff_helper<T, i>::type;
03329         };
03330
03331         template<typename T, size_t i, typename E = void>
03332         struct cosh_coeff_helper {};
03333
03334         template<typename T, size_t i>
03335         struct cosh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03336             using type = typename FractionField<T>::zero;
03337         };
03338
03339         template<typename T, size_t i>
03340         struct cosh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03341             using type = makefraction_t<T, typename T::one, factorial_t<T, i>>;
03342         };
```

```
03343
03344         template<typename T, size_t i>
03345         struct cosh_coeff {
03346             using type = typename cosh_coeff_helper<T, i>::type;
03347         };
03348
03349         template<typename T, size_t i>
03350         struct geom_coeff { using type = typename FractionField<T>::one; };
03351
03352
03353         template<typename T, size_t i, typename E = void>
03354         struct atan_coeff_helper;
03355
03356         template<typename T, size_t i>
03357         struct atan_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03358             using type = makefraction_t<T, alternate_t<T, i / 2>, typename T::template val<i>;
03359         };
03360
03361         template<typename T, size_t i>
03362         struct atan_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03363             using type = typename FractionField<T>::zero;
03364         };
03365
03366         template<typename T, size_t i>
03367         struct atan_coeff { using type = typename atan_coeff_helper<T, i>::type; };
03368
03369         template<typename T, size_t i, typename E = void>
03370         struct asin_coeff_helper;
03371
03372         template<typename T, size_t i>
03373         struct asin_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03374             using type = makefraction_t<T,
03375                 factorial_t<T, i - 1>,
03376                 typename T::template mul_t<
03377                     typename T::template val<i>,
03378                     T::template mul_t<
03379                         pow_t<T, typename T::template inject_constant_t<4>, i / 2>,
03380                         pow<T, factorial_t<T, i / 2>, 2
03381                     >
03382                 >
03383                 >;
03384         };
03385
03386         template<typename T, size_t i>
03387         struct asin_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03388             using type = typename FractionField<T>::zero;
03389         };
03390
03391         template<typename T, size_t i>
03392         struct asin_coeff {
03393             using type = typename asin_coeff_helper<T, i>::type;
03394         };
03395
03396         template<typename T, size_t i>
03397         struct lnp1_coeff {
03398             using type = makefraction_t<T,
03399                 alternate_t<T, i + 1>,
03400                 typename T::template val<i>;
03401         };
03402
03403         template<typename T>
03404         struct lnp1_coeff<T, 0> { using type = typename FractionField<T>::zero; };
03405
03406         template<typename T, size_t i, typename E = void>
03407         struct asinh_coeff_helper;
03408
03409         template<typename T, size_t i>
03410         struct asinh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1>> {
03411             using type = makefraction_t<T,
03412                 typename T::template mul_t<
03413                     alternate_t<T, i / 2>,
03414                     factorial_t<T, i - 1>
03415                 >,
03416                 typename T::template mul_t<
03417                     typename T::template mul_t<
03418                         typename T::template val<i>,
03419                         pow_t<T, factorial_t<T, i / 2>, 2>
03420                     >,
03421                     pow_t<T, typename T::template inject_constant_t<4>, i / 2>
03422                 >
03423             >;
03424         };
03425
03426         template<typename T, size_t i>
03427         struct asinh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0>> {
03428             using type = typename FractionField<T>::zero;
03429         };
```

```
03430
03431         template<typename T, size_t i>
03432         struct asinh_coeff {
03433             using type = typename asinh_coeff_helper<T, i>::type;
03434         };
03435
03436         template<typename T, size_t i, typename E = void>
03437         struct atanh_coeff_helper;
03438
03439         template<typename T, size_t i>
03440         struct atanh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 1» {
03441             // 1/i
03442             using type = typename FractionField<T>:: template val<
03443                 typename T::one,
03444                 typename T::template inject_constant_t<i»;
03445         };
03446
03447         template<typename T, size_t i>
03448         struct atanh_coeff_helper<T, i, std::enable_if_t<(i & 1) == 0» {
03449             using type = typename FractionField<T>::zero;
03450         };
03451
03452         template<typename T, size_t i>
03453         struct atanh_coeff {
03454             using type = typename atanh_coeff_helper<T, i>::type;
03455         };
03456
03457         template<typename T, size_t i, typename E = void>
03458         struct tan_coeff_helper;
03459
03460         template<typename T, size_t i>
03461         struct tan_coeff_helper<T, i, std::enable_if_t<(i % 2) == 0» {
03462             using type = typename FractionField<T>::zero;
03463         };
03464
03465         template<typename T, size_t i>
03466         struct tan_coeff_helper<T, i, std::enable_if_t<(i % 2) != 0» {
03467         private:
03468             // 4^((i+1)/2)
03469             using _4p = typename FractionField<T>::template inject_t<
03470                 pow_t<T, typename T::template inject_constant_t<4>, (i + 1) / 2»;
03471             // 4^((i+1)/2) - 1
03472             using _4pm1 = typename FractionField<T>::template
      sub_t<_4p, typename FractionField<T>::one>;
03473             // (-1)^((i-1)/2)
03474             using altp = typename FractionField<T>::template inject_t<alternate_t<T, (i - 1) / 2»;
03475             using dividend = typename FractionField<T>::template mul_t<
03476                 altp,
03477                 FractionField<T>::template mul_t<
03478                 _4p,
03479                 FractionField<T>::template mul_t<
03480                 _4pm1,
03481                 bernoulli_t<T, (i + 1)>
03482                 >
03483                 >
03484             >;
03485         public:
03486             using type = typename FractionField<T>::template div_t<dividend,
03487                 typename FractionField<T>::template inject_t<factorial_t<T, i + 1»>;
03488         };
03489
03490         template<typename T, size_t i>
03491         struct tan_coeff {
03492             using type = typename tan_coeff_helper<T, i>::type;
03493         };
03494
03495         template<typename T, size_t i, typename E = void>
03496         struct tanh_coeff_helper;
03497
03498         template<typename T, size_t i>
03499         struct tanh_coeff_helper<T, i, std::enable_if_t<(i % 2) == 0» {
03500             using type = typename FractionField<T>::zero;
03501         };
03502
03503         template<typename T, size_t i>
03504         struct tanh_coeff_helper<T, i, std::enable_if_t<(i % 2) != 0» {
03505         private:
03506             using _4p = typename FractionField<T>::template inject_t<
03507                 pow_t<T, typename T::template inject_constant_t<4>, (i + 1) / 2»;
03508             using _4pm1 = typename FractionField<T>::template
      sub_t<_4p, typename FractionField<T>::one>;
03509             using dividend =
03510                 typename FractionField<T>::template mul_t<
03511                     _4p,
03512                     typename FractionField<T>::template mul_t<
03513                         _4pm1,
03514                         bernoulli_t<T, (i + 1)»>::type;
```

```
03515         public:
03516             using type = typename FractionField<T>::template div_t<dividend,
03517                 FractionField<T>::template inject_t<factorial_t<T, i + 1>>>;
03518         };
03519 
03520         template<typename T, size_t i>
03521         struct tanh_coeff {
03522             using type = typename tanh_coeff_helper<T, i>::type;
03523         };
03524     }  // namespace internal
03525 
03529     template<typename Integers, size_t deg>
03530     using exp = taylor<Integers, internal::exp_coeff, deg>;
03531 
03535     template<typename Integers, size_t deg>
03536     using expm1 = typename polynomial<FractionField<Integers>>::template sub_t<
03537         exp<Integers, deg>,
03538         typename polynomial<FractionField<Integers>>::one>;
03539 
03543     template<typename Integers, size_t deg>
03544     using lnp1 = taylor<Integers, internal::lnp1_coeff, deg>;
03545 
03549     template<typename Integers, size_t deg>
03550     using atan = taylor<Integers, internal::atan_coeff, deg>;
03551 
03555     template<typename Integers, size_t deg>
03556     using sin = taylor<Integers, internal::sin_coeff, deg>;
03557 
03561     template<typename Integers, size_t deg>
03562     using sinh = taylor<Integers, internal::sh_coeff, deg>;
03563 
03568     template<typename Integers, size_t deg>
03569     using cosh = taylor<Integers, internal::cosh_coeff, deg>;
03570 
03575     template<typename Integers, size_t deg>
03576     using cos = taylor<Integers, internal::cos_coeff, deg>;
03577 
03582     template<typename Integers, size_t deg>
03583     using geometric_sum = taylor<Integers, internal::geom_coeff, deg>;
03584 
03589     template<typename Integers, size_t deg>
03590     using asin = taylor<Integers, internal::asin_coeff, deg>;
03591 
03596     template<typename Integers, size_t deg>
03597     using asinh = taylor<Integers, internal::asinh_coeff, deg>;
03598 
03603     template<typename Integers, size_t deg>
03604     using atanh = taylor<Integers, internal::atanh_coeff, deg>;
03605 
03610     template<typename Integers, size_t deg>
03611     using tan = taylor<Integers, internal::tan_coeff, deg>;
03612 
03617     template<typename Integers, size_t deg>
03618     using tanh = taylor<Integers, internal::tanh_coeff, deg>;
03619 }  // namespace aerobus
03620 
03621 // continued fractions
03622 namespace aerobus {
03625     template<int64_t... values>
03626     struct ContinuedFraction {};
03627 
03630     template<int64_t a0>
03631     struct ContinuedFraction<a0> {
03633         using type = typename q64::template inject_constant_t<a0>;
03635         static constexpr double val = static_cast<double>(a0);
03636     };
03637 
03641     template<int64_t a0, int64_t... rest>
03642     struct ContinuedFraction<a0, rest...> {
03644         using type = q64::template add_t<
03645                 typename q64::template inject_constant_t<a0>,
03646                 typename q64::template div_t<
03647                     typename q64::one,
03648                     typename ContinuedFraction<rest...>::type
03649                 >;
03650 
03652         static constexpr double val = type::template get<double>();
03653     };
03654 
03658     using PI_fraction =
      ContinuedFraction<3, 7, 15, 1, 292, 1, 1, 1, 2, 1, 3, 1, 14, 2, 1, 1, 2, 2, 2, 2, 1>;
03660     using E_fraction =
      ContinuedFraction<2, 1, 2, 1, 1, 4, 1, 1, 6, 1, 1, 8, 1, 1, 10, 1, 1, 12, 1, 1, 14, 1, 1>;
03662     using SQRT2_fraction =
      ContinuedFraction<1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2>;
03664     using SQRT3_fraction =
      ContinuedFraction<1, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2>;
```

```
    // NOLINT
03665 }  // namespace aerobus
03666
03667 // known polynomials
03668 namespace aerobus {
03669     // CChebyshev
03670     namespace internal {
03671         template<int kind, size_t deg, typename I>
03672         struct chebyshev_helper {
03673             using type = typename polynomial<I>::template sub_t<
03674                 typename polynomial<I>::template mul_t<
03675                     typename polynomial<I>::template mul_t<
03676                         typename polynomial<I>::template inject_constant_t<2>,
03677                         typename polynomial<I>::X>,
03678                     typename chebyshev_helper<kind, deg - 1, I>::type
03679                 >,
03680                 typename chebyshev_helper<kind, deg - 2, I>::type
03681             >;
03682         };
03683
03684         template<typename I>
03685         struct chebyshev_helper<1, 0, I> {
03686             using type = typename polynomial<I>::one;
03687         };
03688
03689         template<typename I>
03690         struct chebyshev_helper<1, 1, I> {
03691             using type = typename polynomial<I>::X;
03692         };
03693
03694         template<typename I>
03695         struct chebyshev_helper<2, 0, I> {
03696             using type = typename polynomial<I>::one;
03697         };
03698
03699         template<typename I>
03700         struct chebyshev_helper<2, 1, I> {
03701             using type = typename polynomial<I>::template mul_t<
03702                 typename polynomial<I>::template inject_constant_t<2>,
03703                 typename polynomial<I>::X>;
03704         };
03705     }  // namespace internal
03706
03707     // Laguerre
03708     namespace internal {
03709         template<size_t deg, typename I>
03710         struct laguerre_helper {
03711             using Q = FractionField<I>;
03712             using PQ = polynomial<Q>;
03713
03714          private:
03715             // Lk = (1 / k) * ((2 * k - 1 - x) * lkm1 - (k - 2)Lkm2)
03716             using lnm2 = typename laguerre_helper<deg - 2, I>::type;
03717             using lnm1 = typename laguerre_helper<deg - 1, I>::type;
03718             // -x + 2k-1
03719             using p = typename PQ::template val<
03720                 typename Q::template inject_constant_t<-1>,
03721                 typename Q::template inject_constant_t<2 * deg - 1»;
03722             // 1/n
03723             using factor = typename PQ::template inject_ring_t<
03724                 typename Q::template val<typename I::one, typename I::template
    inject_constant_t<deg»>;
03725
03726          public:
03727             using type = typename PQ::template mul_t <
03728                 factor,
03729                 typename PQ::template sub_t<
03730                     typename PQ::template mul_t<
03731                         p,
03732                         lnm1
03733                     >,
03734                     typename PQ::template mul_t<
03735                         typename PQ::template inject_constant_t<deg-1>,
03736                         lnm2
03737                     >
03738                 >
03739             >;
03740         };
03741
03742         template<typename I>
03743         struct laguerre_helper<0, I> {
03744             using type = typename polynomial<FractionField<I»::one;
03745         };
03746
03747         template<typename I>
03748         struct laguerre_helper<1, I> {
03749          private:
```

```
03750             using PQ = polynomial<FractionField<I»;
03751          public:
03752             using type = typename PQ::template sub_t<typename PQ::one, typename PQ::X>;
03753         };
03754     }  // namespace internal
03755
03756     // Bernstein
03757     namespace internal {
03758         template<size_t i, size_t m, typename I, typename E = void>
03759         struct bernstein_helper {};
03760
03761         template<typename I>
03762         struct bernstein_helper<0, 0, I> {
03763             using type = typename polynomial<I>::one;
03764         };
03765
03766         template<size_t i, size_t m, typename I>
03767         struct bernstein_helper<i, m, I, std::enable_if_t<
03768                     (m > 0) && (i == 0)» {
03769          private:
03770             using P = polynomial<I>;
03771          public:
03772             using type = typename P::template mul_t<
03773                     typename P::template sub_t<typename P::one, typename P::X>,
03774                     typename bernstein_helper<i, m-1, I>::type>;
03775         };
03776
03777         template<size_t i, size_t m, typename I>
03778         struct bernstein_helper<i, m, I, std::enable_if_t<
03779                     (m > 0) && (i == m)» {
03780          private:
03781             using P = polynomial<I>;
03782          public:
03783             using type = typename P::template mul_t<
03784                     typename P::X,
03785                     typename bernstein_helper<i-1, m-1, I>::type>;
03786         };
03787
03788         template<size_t i, size_t m, typename I>
03789         struct bernstein_helper<i, m, I, std::enable_if_t<
03790                     (m > 0) && (i > 0) && (i < m)» {
03791          private:
03792             using P = polynomial<I>;
03793          public:
03794             using type = typename P::template add_t<
03795                     typename P::template mul_t<
03796                         typename P::template sub_t<typename P::one, typename P::X>,
03797                         typename bernstein_helper<i, m-1, I>::type>,
03798                     typename P::template mul_t<
03799                         typename P::X,
03800                         typename bernstein_helper<i-1, m-1, I>::type»;
03801         };
03802     }  // namespace internal
03803
03804     // AllOne polynomials
03805     namespace internal {
03806         template<size_t deg, typename I>
03807         struct AllOneHelper {
03808             using type = aerobus::add_t<
03809                 typename polynomial<I>::one,
03810                 typename aerobus::mul_t<
03811                     typename polynomial<I>::X,
03812                     typename AllOneHelper<deg-1, I>::type
03813                 »;
03814         };
03815
03816         template<typename I>
03817         struct AllOneHelper<0, I> {
03818             using type = typename polynomial<I>::one;
03819         };
03820     }  // namespace internal
03821
03822     // Bessel polynomials
03823     namespace internal {
03824         template<size_t deg, typename I>
03825         struct BesselHelper {
03826          private:
03827             using P = polynomial<I>;
03828             using factor = typename P::template monomial_t<
03829                 typename I::template inject_constant_t<(2*deg - 1)>,
03830                 1>;
03831          public:
03832             using type = typename P::template add_t<
03833                 typename P::template mul_t<
03834                     factor,
03835                     typename BesselHelper<deg-1, I>::type
03836                 >,
```

```
03837                 typename BesselHelper<deg-2, I>::type
03838             >;
03839         };
03840 
03841         template<typename I>
03842         struct BesselHelper<0, I> {
03843             using type = typename polynomial<I>::one;
03844         };
03845 
03846         template<typename I>
03847         struct BesselHelper<1, I> {
03848          private:
03849             using P = polynomial<I>;
03850          public:
03851             using type = typename P::template add_t<
03852                 typename P::one,
03853                 typename P::X
03854             >;
03855         };
03856     }  // namespace internal
03857 
03858     namespace known_polynomials {
03860         enum hermite_kind {
03862             probabilist,
03864             physicist
03865         };
03866     }
03867 
03868     // hermite
03869     namespace internal {
03870         template<size_t deg, known_polynomials::hermite_kind kind, typename I>
03871         struct hermite_helper {};
03872 
03873         template<size_t deg, typename I>
03874         struct hermite_helper<deg, known_polynomials::hermite_kind::probabilist, I> {
03875          private:
03876             using hnm1 = typename hermite_helper<deg - 1,
      known_polynomials::hermite_kind::probabilist, I>::type;
03877             using hnm2 = typename hermite_helper<deg - 2,
      known_polynomials::hermite_kind::probabilist, I>::type;
03878 
03879          public:
03880             using type = typename polynomial<I>::template sub_t<
03881                 typename polynomial<I>::template mul_t<typename polynomial<I>::X, hnm1>,
03882                 typename polynomial<I>::template mul_t<
03883                     typename polynomial<I>::template inject_constant_t<deg - 1>,
03884                     hnm2
03885                 >
03886             >;
03887         };
03888 
03889         template<size_t deg, typename I>
03890         struct hermite_helper<deg, known_polynomials::hermite_kind::physicist, I> {
03891          private:
03892             using hnm1 = typename hermite_helper<deg - 1, known_polynomials::hermite_kind::physicist,
      I>::type;
03893             using hnm2 = typename hermite_helper<deg - 2, known_polynomials::hermite_kind::physicist,
      I>::type;
03894 
03895          public:
03896             using type = typename polynomial<I>::template sub_t<
03897                 // 2X Hn-1
03898                 typename polynomial<I>::template mul_t<
03899                     typename pi64::val<typename I::template inject_constant_t<2>,
03900                     typename I::zero>, hnm1>,
03901 
03902                 typename polynomial<I>::template mul_t<
03903                     typename polynomial<I>::template inject_constant_t<2*(deg - 1)>,
03904                     hnm2
03905                 >
03906             >;
03907         };
03908 
03909         template<typename I>
03910         struct hermite_helper<0, known_polynomials::hermite_kind::probabilist, I> {
03911             using type = typename polynomial<I>::one;
03912         };
03913 
03914         template<typename I>
03915         struct hermite_helper<1, known_polynomials::hermite_kind::probabilist, I> {
03916             using type = typename polynomial<I>::X;
03917         };
03918 
03919         template<typename I>
03920         struct hermite_helper<0, known_polynomials::hermite_kind::physicist, I> {
03921             using type = typename pi64::one;
03922         };
```

```
03923
03924         template<typename I>
03925         struct hermite_helper<1, known_polynomials::hermite_kind::physicist, I> {
03926             // 2X
03927             using type = typename polynomial<I>::template val<
03928                 typename I::template inject_constant_t<2>,
03929                 typename I::zero>;
03930         };
03931     }  // namespace internal
03932
03933     // legendre
03934     namespace internal {
03935         template<size_t n, typename I>
03936         struct legendre_helper {
03937          private:
03938             using Q = FractionField<I>;
03939             using PQ = polynomial<Q>;
03940             // 1/n constant
03941             // (2n-1)/n X
03942             using fact_left = typename PQ::template monomial_t<
03943                 makefraction_t<I,
03944                     typename I::template inject_constant_t<2*n-1>,
03945                     typename I::template inject_constant_t<n>
03946                 >,
03947             1>;
03948             // (n-1) / n
03949             using fact_right = typename PQ::template val<
03950                 makefraction_t<I,
03951                     typename I::template inject_constant_t<n-1>,
03952                     typename I::template inject_constant_t<n»>;
03953
03954          public:
03955             using type = PQ::template sub_t<
03956                     typename PQ::template mul_t<
03957                         fact_left,
03958                         typename legendre_helper<n-1, I>::type
03959                     >,
03960                     typename PQ::template mul_t<
03961                         fact_right,
03962                         typename legendre_helper<n-2, I>::type
03963                     >
03964                 >;
03965         };
03966
03967         template<typename I>
03968         struct legendre_helper<0, I> {
03969             using type = typename polynomial<FractionField<I»::one;
03970         };
03971
03972         template<typename I>
03973         struct legendre_helper<1, I> {
03974             using type = typename polynomial<FractionField<I»::X;
03975         };
03976     }  // namespace internal
03977
03978     // bernoulli polynomials
03979     namespace internal {
03980         template<size_t n>
03981         struct bernoulli_coeff {
03982             template<typename T, size_t i>
03983             struct inner {
03984              private:
03985                 using F = FractionField<T>;
03986              public:
03987                 using type = typename F::template mul_t<
03988                     typename F::template inject_ring_t<combination_t<T, i, n»,
03989                     bernoulli_t<T, n-i>
03990                 >;
03991             };
03992         };
03993     }  // namespace internal
03994
03995     namespace internal {
03996         template<size_t n>
03997         struct touchard_coeff {
03998             template<typename T, size_t i>
03999             struct inner {
04000                 using type = stirling_2_t<T, n, i>;
04001             };
04002         };
04003     }  // namespace internal
04004
04005     namespace internal {
04006         template<typename I = aerobus::i64>
04007         struct AbelHelper {
04008          private:
04009             using P = aerobus::polynomial<I>;
```

```
04010
04011         public:
04012            // to keep recursion working, we need to operate on a*n and not just a
04013            template<size_t deg, I::inner_type an>
04014            struct Inner {
04015                // abel(n, a) = (x-an) * abel(n-1, a)
04016                using type = typename aerobus::mul_t<
04017                    typename Inner<deg-1, an>::type,
04018                    typename aerobus::sub_t<typename P::X, typename P::template inject_constant_t<an>>
04019                >;
04020            };
04021
04022            // abel(0, a) = 1
04023            template<I::inner_type an>
04024            struct Inner<0, an> {
04025                using type = P::one;
04026            };
04027
04028            // abel(1, a) = X
04029            template<I::inner_type an>
04030            struct Inner<1, an> {
04031                using type = P::X;
04032            };
04033        };
04034    }  // namespace internal
04035
04037    namespace known_polynomials {
04038
04047        template<size_t n, auto a, typename I = aerobus::i64>
04048        using abel = typename internal::AbelHelper<I>::template Inner<n, a*n>::type;
04049
04057        template <size_t deg, typename I = aerobus::i64>
04058        using chebyshev_T = typename internal::chebyshev_helper<1, deg, I>::type;
04059
04069        template <size_t deg, typename I = aerobus::i64>
04070        using chebyshev_U = typename internal::chebyshev_helper<2, deg, I>::type;
04071
04081        template <size_t deg, typename I = aerobus::i64>
04082        using laguerre = typename internal::laguerre_helper<deg, I>::type;
04083
04090        template <size_t deg, typename I = aerobus::i64>
04091        using hermite_prob = typename internal::hermite_helper<deg, hermite_kind::probabilist,
      I>::type;
04092
04099        template <size_t deg, typename I = aerobus::i64>
04100        using hermite_phys = typename internal::hermite_helper<deg, hermite_kind::physicist, I>::type;
04101
04112        template<size_t i, size_t m, typename I = aerobus::i64>
04113        using bernstein = typename internal::bernstein_helper<i, m, I>::type;
04114
04124        template<size_t deg, typename I = aerobus::i64>
04125        using legendre = typename internal::legendre_helper<deg, I>::type;
04126
04136        template<size_t deg, typename I = aerobus::i64>
04137        using bernoulli = taylor<I, internal::bernoulli_coeff<deg>::template inner, deg>;
04138
04145        template<size_t deg, typename I = aerobus::i64>
04146        using allone = typename internal::AllOneHelper<deg, I>::type;
04147
04155        template<size_t deg, typename I = aerobus::i64>
04156        using bessel = typename internal::BesselHelper<deg, I>::type;
04157
04165        template<size_t deg, typename I = aerobus::i64>
04166        using touchard = taylor<I, internal::touchard_coeff<deg>::template inner, deg>;
04167    }  // namespace known_polynomials
04168 }  // namespace aerobus
04169
04170
04171 #ifdef AEROBUS_CONWAY_IMPORTS
04172
04173 // conway polynomials
04174 namespace aerobus {
04178     template<int p, int n>
04179     struct ConwayPolynomial {};
04180
04181 #ifndef DO_NOT_DOCUMENT
04182     #define ZPZV ZPZ::template val
04183     #define POLYV aerobus::polynomial<ZPZ>::template val
04184     template<> struct ConwayPolynomial<2, 1> { using ZPZ = aerobus::zpz<2>; using type =
      POLYV<ZPZV<1>, ZPZV<1»; };  // NOLINT
04185     template<> struct ConwayPolynomial<2, 2> { using ZPZ = aerobus::zpz<2>; using type =
      POLYV<ZPZV<1>, ZPZV<1>, ZPZV<1»; }; // NOLINT
04186     template<> struct ConwayPolynomial<2, 3> { using ZPZ = aerobus::zpz<2>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04187     template<> struct ConwayPolynomial<2, 4> { using ZPZ = aerobus::zpz<2>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04188     template<> struct ConwayPolynomial<2, 5> { using ZPZ = aerobus::zpz<2>; using type =
```

```
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04189     template<> struct ConwayPolynomial<2, 6> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04190     template<> struct ConwayPolynomial<2, 7> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04191     template<> struct ConwayPolynomial<2, 8> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04192     template<> struct ConwayPolynomial<2, 9> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1»; };  //
    NOLINT
04193     template<> struct ConwayPolynomial<2, 10> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1>,
    ZPZV<1»; };  // NOLINT
04194     template<> struct ConwayPolynomial<2, 11> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>,
    ZPZV<0>, ZPZV<1»; };  // NOLINT
04195     template<> struct ConwayPolynomial<2, 12> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1>,
    ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04196     template<> struct ConwayPolynomial<2, 13> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>,
    ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04197     template<> struct ConwayPolynomial<2, 14> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<1>,
    ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04198     template<> struct ConwayPolynomial<2, 15> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04199     template<> struct ConwayPolynomial<2, 16> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04200     template<> struct ConwayPolynomial<2, 17> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04201     template<> struct ConwayPolynomial<2, 18> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04202     template<> struct ConwayPolynomial<2, 19> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1»; };  //
    NOLINT
04203     template<> struct ConwayPolynomial<2, 20> { using ZPZ = aerobus::zpz<2>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1»; };
    // NOLINT
04204     template<> struct ConwayPolynomial<3, 1> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<1»; };  // NOLINT
04205     template<> struct ConwayPolynomial<3, 2> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<2>, ZPZV<2»; };  // NOLINT
04206     template<> struct ConwayPolynomial<3, 3> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<1»; };  // NOLINT
04207     template<> struct ConwayPolynomial<3, 4> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<2>, ZPZV<0>, ZPZV<0>, ZPZV<2»; };  // NOLINT
04208     template<> struct ConwayPolynomial<3, 5> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<1»; };  // NOLINT
04209     template<> struct ConwayPolynomial<3, 6> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<1>, ZPZV<2>, ZPZV<2»; };  // NOLINT
04210     template<> struct ConwayPolynomial<3, 7> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<1»; };  // NOLINT
04211     template<> struct ConwayPolynomial<3, 8> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<2>, ZPZV<2»; };  // NOLINT
04212     template<> struct ConwayPolynomial<3, 9> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<2>, ZPZV<1>, ZPZV<1»; };  //
    NOLINT
04213     template<> struct ConwayPolynomial<3, 10> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<2>, ZPZV<2>, ZPZV<0>, ZPZV<0>, ZPZV<1>,
    ZPZV<2»; };  // NOLINT
04214     template<> struct ConwayPolynomial<3, 11> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>,
    ZPZV<0>, ZPZV<1»; };  // NOLINT
04215     template<> struct ConwayPolynomial<3, 12> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<0>,
    ZPZV<1>, ZPZV<0>, ZPZV<2»; };  // NOLINT
04216     template<> struct ConwayPolynomial<3, 13> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<1»; };  // NOLINT
04217     template<> struct ConwayPolynomial<3, 14> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<1>, ZPZV<1>, ZPZV<2>, ZPZV<1>,
    ZPZV<0>, ZPZV<2>, ZPZV<1>, ZPZV<0>, ZPZV<2»; };  // NOLINT
04218     template<> struct ConwayPolynomial<3, 15> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<1>, ZPZV<1»; };  // NOLINT
04219     template<> struct ConwayPolynomial<3, 16> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>,
    ZPZV<2>, ZPZV<0>, ZPZV<2>, ZPZV<2>, ZPZV<2>, ZPZV<1>, ZPZV<2»; };  // NOLINT
04220     template<> struct ConwayPolynomial<3, 17> { using ZPZ = aerobus::zpz<3>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<1»; };  // NOLINT
04221     template<> struct ConwayPolynomial<3, 18> { using ZPZ = aerobus::zpz<3>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>,
      ZPZV<2>, ZPZV<0>, ZPZV<2>, ZPZV<1>, ZPZV<2>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<2»; };  // NOLINT
04222     template<> struct ConwayPolynomial<3, 19> { using ZPZ = aerobus::zpz<3>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<1»; };  //
      NOLINT
04223     template<> struct ConwayPolynomial<3, 20> { using ZPZ = aerobus::zpz<3>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<1>,
      ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<2>, ZPZV<2>, ZPZV<0>, ZPZV<1>, ZPZV<2»; };
      // NOLINT
04224     template<> struct ConwayPolynomial<5, 1> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<3»; };  // NOLINT
04225     template<> struct ConwayPolynomial<5, 2> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<4>, ZPZV<2»; };  // NOLINT
04226     template<> struct ConwayPolynomial<5, 3> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<3»; };  // NOLINT
04227     template<> struct ConwayPolynomial<5, 4> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<4>, ZPZV<2»; };  // NOLINT
04228     template<> struct ConwayPolynomial<5, 5> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<3»; };  // NOLINT
04229     template<> struct ConwayPolynomial<5, 6> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<4>, ZPZV<1>, ZPZV<0>, ZPZV<2»; };  // NOLINT
04230     template<> struct ConwayPolynomial<5, 7> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<3»; };  // NOLINT
04231     template<> struct ConwayPolynomial<5, 8> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<4>, ZPZV<2»; };  // NOLINT
04232     template<> struct ConwayPolynomial<5, 9> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<1>, ZPZV<3»; };  //
      NOLINT
04233     template<> struct ConwayPolynomial<5, 10> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<3>, ZPZV<2>, ZPZV<4>, ZPZV<1>,
      ZPZV<2»; };  // NOLINT
04234     template<> struct ConwayPolynomial<5, 11> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<3>, ZPZV<3»; };  // NOLINT
04235     template<> struct ConwayPolynomial<5, 12> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<4>,
      ZPZV<3>, ZPZV<2>, ZPZV<2»; };  // NOLINT
04236     template<> struct ConwayPolynomial<5, 13> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<4>, ZPZV<3>, ZPZV<3»; };  // NOLINT
04237     template<> struct ConwayPolynomial<5, 14> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<4>,
      ZPZV<2>, ZPZV<3>, ZPZV<0>, ZPZV<1>, ZPZV<2»; };  // NOLINT
04238     template<> struct ConwayPolynomial<5, 15> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<2>, ZPZV<0>, ZPZV<3>, ZPZV<3>, ZPZV<4>, ZPZV<3»; };  // NOLINT
04239     template<> struct ConwayPolynomial<5, 16> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<4>,
      ZPZV<4>, ZPZV<4>, ZPZV<2>, ZPZV<4>, ZPZV<4>, ZPZV<1>, ZPZV<2»; };  // NOLINT
04240     template<> struct ConwayPolynomial<5, 17> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<2>, ZPZV<3»; };  // NOLINT
04241     template<> struct ConwayPolynomial<5, 18> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<1>, ZPZV<1>,
      ZPZV<2>, ZPZV<0>, ZPZV<2>, ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<2>, ZPZV<0>, ZPZV<2»; };  // NOLINT
04242     template<> struct ConwayPolynomial<5, 19> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<3»; };  //
      NOLINT
04243     template<> struct ConwayPolynomial<5, 20> { using ZPZ = aerobus::zpz<5>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<0>,
      ZPZV<4>, ZPZV<3>, ZPZV<2>, ZPZV<0>, ZPZV<3>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<0>, ZPZV<1>, ZPZV<2»; };
      // NOLINT
04244     template<> struct ConwayPolynomial<7, 1> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<4»; };  // NOLINT
04245     template<> struct ConwayPolynomial<7, 2> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<6>, ZPZV<3»; };  // NOLINT
04246     template<> struct ConwayPolynomial<7, 3> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<6>, ZPZV<0>, ZPZV<4»; };  // NOLINT
04247     template<> struct ConwayPolynomial<7, 4> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<4>, ZPZV<3»; };  // NOLINT
04248     template<> struct ConwayPolynomial<7, 5> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<4»; };  // NOLINT
04249     template<> struct ConwayPolynomial<7, 6> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<5>, ZPZV<4>, ZPZV<6>, ZPZV<3»; };  // NOLINT
04250     template<> struct ConwayPolynomial<7, 7> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<4»; };  // NOLINT
04251     template<> struct ConwayPolynomial<7, 8> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<6>, ZPZV<2>, ZPZV<3»; };  // NOLINT
04252     template<> struct ConwayPolynomial<7, 9> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<4»; };  //
      NOLINT
04253     template<> struct ConwayPolynomial<7, 10> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<4>, ZPZV<1>, ZPZV<2>, ZPZV<3>,
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      ZPZV<3»; };  // NOLINT
04254     template<> struct ConwayPolynomial<7, 11> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<1>, ZPZV<4»; };  // NOLINT
04255     template<> struct ConwayPolynomial<7, 12> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<5>, ZPZV<3>, ZPZV<2>, ZPZV<4>, ZPZV<0>,
      ZPZV<5>, ZPZV<0>, ZPZV<3»; };  // NOLINT
04256     template<> struct ConwayPolynomial<7, 13> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<6>, ZPZV<0>, ZPZV<4»; };  // NOLINT
04257     template<> struct ConwayPolynomial<7, 14> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<0>, ZPZV<6>,
      ZPZV<2>, ZPZV<0>, ZPZV<3>, ZPZV<6>, ZPZV<3»; };  // NOLINT
04258     template<> struct ConwayPolynomial<7, 15> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>,
      ZPZV<6>, ZPZV<6>, ZPZV<4>, ZPZV<1>, ZPZV<2>, ZPZV<4»; };  // NOLINT
04259     template<> struct ConwayPolynomial<7, 16> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<5>,
      ZPZV<3>, ZPZV<4>, ZPZV<1>, ZPZV<6>, ZPZV<2>, ZPZV<4>, ZPZV<3»; };  // NOLINT
04260     template<> struct ConwayPolynomial<7, 17> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<4»; };  // NOLINT
04261     template<> struct ConwayPolynomial<7, 18> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<2>, ZPZV<6>, ZPZV<1>,
      ZPZV<6>, ZPZV<5>, ZPZV<1>, ZPZV<3>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<2>, ZPZV<3»; };  // NOLINT
04262     template<> struct ConwayPolynomial<7, 19> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<0>, ZPZV<4»; };  //
      NOLINT
04263     template<> struct ConwayPolynomial<7, 20> { using ZPZ = aerobus::zpz<7>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<6>,
      ZPZV<2>, ZPZV<5>, ZPZV<2>, ZPZV<3>, ZPZV<1>, ZPZV<3>, ZPZV<0>, ZPZV<3>, ZPZV<0>, ZPZV<1>, ZPZV<3»; };
      // NOLINT
04264     template<> struct ConwayPolynomial<11, 1> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<9»; };  // NOLINT
04265     template<> struct ConwayPolynomial<11, 2> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<7>, ZPZV<2»; };  // NOLINT
04266     template<> struct ConwayPolynomial<11, 3> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<9»; };  // NOLINT
04267     template<> struct ConwayPolynomial<11, 4> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<10>, ZPZV<2»; };  // NOLINT
04268     template<> struct ConwayPolynomial<11, 5> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<0>, ZPZV<9»; };  // NOLINT
04269     template<> struct ConwayPolynomial<11, 6> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<4>, ZPZV<6>, ZPZV<7>, ZPZV<2»; };  // NOLINT
04270     template<> struct ConwayPolynomial<11, 7> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<9»; };  // NOLINT
04271     template<> struct ConwayPolynomial<11, 8> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<7>, ZPZV<1>, ZPZV<7>, ZPZV<2»; };  // NOLINT
04272     template<> struct ConwayPolynomial<11, 9> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<8>, ZPZV<9»; };  //
      NOLINT
04273     template<> struct ConwayPolynomial<11, 10> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<8>, ZPZV<10>, ZPZV<6>, ZPZV<6>,
      ZPZV<2»; };  // NOLINT
04274     template<> struct ConwayPolynomial<11, 11> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<10>, ZPZV<9»; };  // NOLINT
04275     template<> struct ConwayPolynomial<11, 12> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>, ZPZV<4>, ZPZV<2>, ZPZV<5>, ZPZV<5>,
      ZPZV<6>, ZPZV<5>, ZPZV<2»; };  // NOLINT
04276     template<> struct ConwayPolynomial<11, 13> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<9»; };  // NOLINT
04277     template<> struct ConwayPolynomial<11, 14> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<9>, ZPZV<6>,
      ZPZV<4>, ZPZV<8>, ZPZV<6>, ZPZV<10>, ZPZV<2»; };  // NOLINT
04278     template<> struct ConwayPolynomial<11, 15> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>,
      ZPZV<7>, ZPZV<0>, ZPZV<5>, ZPZV<0>, ZPZV<0>, ZPZV<9»; };  // NOLINT
04279     template<> struct ConwayPolynomial<11, 16> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<10>,
      ZPZV<1>, ZPZV<3>, ZPZV<5>, ZPZV<3>, ZPZV<10>, ZPZV<9>, ZPZV<2»; };  // NOLINT
04280     template<> struct ConwayPolynomial<11, 17> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<9»; };  // NOLINT
04281     template<> struct ConwayPolynomial<11, 18> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<8>, ZPZV<10>, ZPZV<8>,
      ZPZV<3>, ZPZV<9>, ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<9>, ZPZV<8>, ZPZV<2>, ZPZV<2»; };  // NOLINT
04282     template<> struct ConwayPolynomial<11, 19> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<2>, ZPZV<9»; };  //
      NOLINT
04283     template<> struct ConwayPolynomial<11, 20> { using ZPZ = aerobus::zpz<11>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<10>,
      ZPZV<9>, ZPZV<1>, ZPZV<5>, ZPZV<7>, ZPZV<2>, ZPZV<4>, ZPZV<5>, ZPZV<5>, ZPZV<6>, ZPZV<5>, ZPZV<2»; };
      // NOLINT
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04284     template<> struct ConwayPolynomial<13, 1> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<11»; };  // NOLINT
04285     template<> struct ConwayPolynomial<13, 2> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<12>, ZPZV<2»; };  // NOLINT
04286     template<> struct ConwayPolynomial<13, 3> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<11»; };  // NOLINT
04287     template<> struct ConwayPolynomial<13, 4> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<12>, ZPZV<2»; };  // NOLINT
04288     template<> struct ConwayPolynomial<13, 5> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<11»; };  // NOLINT
04289     template<> struct ConwayPolynomial<13, 6> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<11>, ZPZV<11>, ZPZV<2»; };  // NOLINT
04290     template<> struct ConwayPolynomial<13, 7> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<11»; };  // NOLINT
04291     template<> struct ConwayPolynomial<13, 8> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<12>, ZPZV<2>, ZPZV<3>, ZPZV<2»; };  // NOLINT
04292     template<> struct ConwayPolynomial<13, 9> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<8>, ZPZV<12>, ZPZV<12>, ZPZV<11»; };
      // NOLINT
04293     template<> struct ConwayPolynomial<13, 10> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<5>, ZPZV<8>, ZPZV<1>, ZPZV<1>,
      ZPZV<2»; };  // NOLINT
04294     template<> struct ConwayPolynomial<13, 11> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<3>, ZPZV<11»; };  // NOLINT
04295     template<> struct ConwayPolynomial<13, 12> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<5>, ZPZV<8>, ZPZV<11>, ZPZV<3>, ZPZV<1>,
      ZPZV<1>, ZPZV<4>, ZPZV<2»; };  // NOLINT
04296     template<> struct ConwayPolynomial<13, 13> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<11»; };  // NOLINT
04297     template<> struct ConwayPolynomial<13, 14> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<0>, ZPZV<6>,
      ZPZV<11>, ZPZV<7>, ZPZV<10>, ZPZV<10>, ZPZV<2»; };  // NOLINT
04298     template<> struct ConwayPolynomial<13, 15> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<12>,
      ZPZV<2>, ZPZV<11>, ZPZV<10>, ZPZV<11>, ZPZV<8>, ZPZV<11»; };  // NOLINT
04299     template<> struct ConwayPolynomial<13, 16> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<12>,
      ZPZV<8>, ZPZV<2>, ZPZV<12>, ZPZV<9>, ZPZV<12>, ZPZV<6>, ZPZV<2»; };  // NOLINT
04300     template<> struct ConwayPolynomial<13, 17> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<6>, ZPZV<11»; };  // NOLINT
04301     template<> struct ConwayPolynomial<13, 18> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<4>, ZPZV<11>,
      ZPZV<11>, ZPZV<9>, ZPZV<5>, ZPZV<3>, ZPZV<5>, ZPZV<6>, ZPZV<0>, ZPZV<9>, ZPZV<2»; };  // NOLINT
04302     template<> struct ConwayPolynomial<13, 19> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<11»; };  //
      NOLINT
04303     template<> struct ConwayPolynomial<13, 20> { using ZPZ = aerobus::zpz<13>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<12>,
      ZPZV<9>, ZPZV<0>, ZPZV<7>, ZPZV<8>, ZPZV<7>, ZPZV<4>, ZPZV<0>, ZPZV<4>, ZPZV<8>, ZPZV<11>, ZPZV<2»; };
      // NOLINT
04304     template<> struct ConwayPolynomial<17, 1> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<14»; };  // NOLINT
04305     template<> struct ConwayPolynomial<17, 2> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<16>, ZPZV<3»; };  // NOLINT
04306     template<> struct ConwayPolynomial<17, 3> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<14»; };  // NOLINT
04307     template<> struct ConwayPolynomial<17, 4> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<10>, ZPZV<3»; };  // NOLINT
04308     template<> struct ConwayPolynomial<17, 5> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<14»; };  // NOLINT
04309     template<> struct ConwayPolynomial<17, 6> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<10>, ZPZV<3>, ZPZV<3»; };  // NOLINT
04310     template<> struct ConwayPolynomial<17, 7> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<14»; };  // NOLINT
04311     template<> struct ConwayPolynomial<17, 8> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<12>, ZPZV<0>, ZPZV<6>, ZPZV<3»; };  // NOLINT
04312     template<> struct ConwayPolynomial<17, 9> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<8>, ZPZV<14»; };
      // NOLINT
04313     template<> struct ConwayPolynomial<17, 10> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<6>, ZPZV<5>, ZPZV<9>, ZPZV<12>,
      ZPZV<3»; };  // NOLINT
04314     template<> struct ConwayPolynomial<17, 11> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<5>, ZPZV<14»; };  // NOLINT
04315     template<> struct ConwayPolynomial<17, 12> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<4>, ZPZV<14>, ZPZV<14>, ZPZV<13>, ZPZV<6>,
      ZPZV<14>, ZPZV<9>, ZPZV<3»; };  // NOLINT
04316     template<> struct ConwayPolynomial<17, 13> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<14»; };  // NOLINT
04317     template<> struct ConwayPolynomial<17, 14> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<11>, ZPZV<1>, ZPZV<8>,
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      ZPZV<16>, ZPZV<13>, ZPZV<9>, ZPZV<3>, ZPZV<3»; };  // NOLINT
04318     template<> struct ConwayPolynomial<17, 15> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>,
      ZPZV<4>, ZPZV<16>, ZPZV<6>, ZPZV<14>, ZPZV<14>, ZPZV<14»; };  // NOLINT
04319     template<> struct ConwayPolynomial<17, 16> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<13>,
      ZPZV<5>, ZPZV<2>, ZPZV<12>, ZPZV<13>, ZPZV<12>, ZPZV<1>, ZPZV<3»; };  // NOLINT
04320     template<> struct ConwayPolynomial<17, 17> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<14»; };  // NOLINT
04321     template<> struct ConwayPolynomial<17, 18> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<16>,
      ZPZV<7>, ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<11>, ZPZV<13>, ZPZV<13>, ZPZV<9>, ZPZV<3»; };  // NOLINT
04322     template<> struct ConwayPolynomial<17, 19> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<14»; };  //
      NOLINT
04323     template<> struct ConwayPolynomial<17, 20> { using ZPZ = aerobus::zpz<17>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<5>,
      ZPZV<16>, ZPZV<14>, ZPZV<13>, ZPZV<3>, ZPZV<14>, ZPZV<9>, ZPZV<1>, ZPZV<13>, ZPZV<2>, ZPZV<5>,
      ZPZV<3»; };  // NOLINT
04324     template<> struct ConwayPolynomial<19, 1> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<17»; };  // NOLINT
04325     template<> struct ConwayPolynomial<19, 2> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<18>, ZPZV<2»; };  // NOLINT
04326     template<> struct ConwayPolynomial<19, 3> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<17»; };  // NOLINT
04327     template<> struct ConwayPolynomial<19, 4> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<11>, ZPZV<2»; };  // NOLINT
04328     template<> struct ConwayPolynomial<19, 5> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<17»; };  // NOLINT
04329     template<> struct ConwayPolynomial<19, 6> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<17>, ZPZV<6>, ZPZV<2»; };  // NOLINT
04330     template<> struct ConwayPolynomial<19, 7> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<17»; };  // NOLINT
04331     template<> struct ConwayPolynomial<19, 8> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<12>, ZPZV<10>, ZPZV<3>, ZPZV<2»; };  // NOLINT
04332     template<> struct ConwayPolynomial<19, 9> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<14>, ZPZV<16>, ZPZV<17»; };
      // NOLINT
04333     template<> struct ConwayPolynomial<19, 10> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<13>, ZPZV<17>, ZPZV<3>, ZPZV<4>,
      ZPZV<2»; };  // NOLINT
04334     template<> struct ConwayPolynomial<19, 11> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<8>, ZPZV<17»; };  // NOLINT
04335     template<> struct ConwayPolynomial<19, 12> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<2>, ZPZV<18>, ZPZV<2>, ZPZV<9>,
      ZPZV<16>, ZPZV<7>, ZPZV<2»; };  // NOLINT
04336     template<> struct ConwayPolynomial<19, 13> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<17»; };  // NOLINT
04337     template<> struct ConwayPolynomial<19, 14> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<11>, ZPZV<11>,
      ZPZV<1>, ZPZV<5>, ZPZV<16>, ZPZV<7>, ZPZV<2»; };  // NOLINT
04338     template<> struct ConwayPolynomial<19, 15> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<10>,
      ZPZV<11>, ZPZV<13>, ZPZV<15>, ZPZV<14>, ZPZV<0>, ZPZV<17»; };  // NOLINT
04339     template<> struct ConwayPolynomial<19, 16> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>,
      ZPZV<13>, ZPZV<0>, ZPZV<15>, ZPZV<9>, ZPZV<6>, ZPZV<14>, ZPZV<2»; };  // NOLINT
04340     template<> struct ConwayPolynomial<19, 17> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<17»; };  // NOLINT
04341     template<> struct ConwayPolynomial<19, 18> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<9>, ZPZV<7>,
      ZPZV<17>, ZPZV<5>, ZPZV<0>, ZPZV<16>, ZPZV<5>, ZPZV<7>, ZPZV<3>, ZPZV<14>, ZPZV<2»; };  // NOLINT
04342     template<> struct ConwayPolynomial<19, 19> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<17»; };  //
      NOLINT
04343     template<> struct ConwayPolynomial<19, 20> { using ZPZ = aerobus::zpz<19>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>,
      ZPZV<13>, ZPZV<0>, ZPZV<4>, ZPZV<7>, ZPZV<8>, ZPZV<6>, ZPZV<0>, ZPZV<3>, ZPZV<6>, ZPZV<11>, ZPZV<2»;
      };  // NOLINT
04344     template<> struct ConwayPolynomial<23, 1> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<18»; };  // NOLINT
04345     template<> struct ConwayPolynomial<23, 2> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<21>, ZPZV<5»; };  // NOLINT
04346     template<> struct ConwayPolynomial<23, 3> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<18»; };  // NOLINT
04347     template<> struct ConwayPolynomial<23, 4> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<19>, ZPZV<5»; };  // NOLINT
04348     template<> struct ConwayPolynomial<23, 5> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<18»; };  // NOLINT
04349     template<> struct ConwayPolynomial<23, 6> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<9>, ZPZV<9>, ZPZV<1>, ZPZV<5»; };  // NOLINT
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04350     template<> struct ConwayPolynomial<23, 7> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<21>, ZPZV<18>>; };  // NOLINT
04351     template<> struct ConwayPolynomial<23, 8> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<20>, ZPZV<5>, ZPZV<3>, ZPZV<5>>; };  // NOLINT
04352     template<> struct ConwayPolynomial<23, 9> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<8>, ZPZV<9>, ZPZV<18>>; };
      // NOLINT
04353     template<> struct ConwayPolynomial<23, 10> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<5>, ZPZV<15>, ZPZV<6>, ZPZV<1>,
      ZPZV<5>>; };  // NOLINT
04354     template<> struct ConwayPolynomial<23, 11> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<22>,
      ZPZV<7>, ZPZV<18>>; };  // NOLINT
04355     template<> struct ConwayPolynomial<23, 12> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<21>, ZPZV<21>, ZPZV<15>, ZPZV<14>, ZPZV<12>,
      ZPZV<18>, ZPZV<12>, ZPZV<5>>; };  // NOLINT
04356     template<> struct ConwayPolynomial<23, 13> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<18>>; };  // NOLINT
04357     template<> struct ConwayPolynomial<23, 14> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<5>, ZPZV<16>, ZPZV<1>,
      ZPZV<18>, ZPZV<19>, ZPZV<1>, ZPZV<22>, ZPZV<5>>; };  // NOLINT
04358     template<> struct ConwayPolynomial<23, 15> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>,
      ZPZV<8>, ZPZV<15>, ZPZV<9>, ZPZV<7>, ZPZV<18>, ZPZV<18>>; };  // NOLINT
04359     template<> struct ConwayPolynomial<23, 16> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>,
      ZPZV<19>, ZPZV<16>, ZPZV<13>, ZPZV<1>, ZPZV<14>, ZPZV<17>, ZPZV<5>>; };  // NOLINT
04360     template<> struct ConwayPolynomial<23, 17> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<20>, ZPZV<18>>; };  // NOLINT
04361     template<> struct ConwayPolynomial<23, 18> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<18>, ZPZV<2>, ZPZV<1>,
      ZPZV<18>, ZPZV<3>, ZPZV<16>, ZPZV<21>, ZPZV<0>, ZPZV<11>, ZPZV<3>, ZPZV<19>, ZPZV<5>>; };  // NOLINT
04362     template<> struct ConwayPolynomial<23, 19> { using ZPZ = aerobus::zpz<23>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<18>>; };  //
      NOLINT
04363     template<> struct ConwayPolynomial<29, 1> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<27>>; };  // NOLINT
04364     template<> struct ConwayPolynomial<29, 2> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<24>, ZPZV<2>>; };  // NOLINT
04365     template<> struct ConwayPolynomial<29, 3> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<27>>; };  // NOLINT
04366     template<> struct ConwayPolynomial<29, 4> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<15>, ZPZV<2>>; };  // NOLINT
04367     template<> struct ConwayPolynomial<29, 5> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<27>>; };  // NOLINT
04368     template<> struct ConwayPolynomial<29, 6> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<25>, ZPZV<17>, ZPZV<13>, ZPZV<2>>; };  // NOLINT
04369     template<> struct ConwayPolynomial<29, 7> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<27>>; };  // NOLINT
04370     template<> struct ConwayPolynomial<29, 8> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<24>, ZPZV<26>, ZPZV<23>, ZPZV<2>>; };  //
      NOLINT
04371     template<> struct ConwayPolynomial<29, 9> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<22>, ZPZV<22>, ZPZV<27>>; };
      // NOLINT
04372     template<> struct ConwayPolynomial<29, 10> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<25>, ZPZV<8>, ZPZV<17>, ZPZV<2>, ZPZV<22>,
      ZPZV<2>>; };  // NOLINT
04373     template<> struct ConwayPolynomial<29, 11> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<28>,
      ZPZV<8>, ZPZV<27>>; };  // NOLINT
04374     template<> struct ConwayPolynomial<29, 12> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<19>, ZPZV<28>, ZPZV<9>, ZPZV<16>, ZPZV<25>,
      ZPZV<1>, ZPZV<1>, ZPZV<2>>; };  // NOLINT
04375     template<> struct ConwayPolynomial<29, 13> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<27>>; };  // NOLINT
04376     template<> struct ConwayPolynomial<29, 14> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<3>, ZPZV<14>, ZPZV<10>,
      ZPZV<21>, ZPZV<18>, ZPZV<27>, ZPZV<5>, ZPZV<2>>; };  // NOLINT
04377     template<> struct ConwayPolynomial<29, 15> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>,
      ZPZV<14>, ZPZV<8>, ZPZV<1>, ZPZV<12>, ZPZV<26>, ZPZV<27>>; };  // NOLINT
04378     template<> struct ConwayPolynomial<29, 16> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<27>,
      ZPZV<2>, ZPZV<18>, ZPZV<23>, ZPZV<1>, ZPZV<27>, ZPZV<10>, ZPZV<2>>; };  // NOLINT
04379     template<> struct ConwayPolynomial<29, 17> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<27>>; };  // NOLINT
04380     template<> struct ConwayPolynomial<29, 18> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<1>, ZPZV<1>,
      ZPZV<6>, ZPZV<26>, ZPZV<2>, ZPZV<10>, ZPZV<8>, ZPZV<16>, ZPZV<19>, ZPZV<14>, ZPZV<2>>; };  // NOLINT
04381     template<> struct ConwayPolynomial<29, 19> { using ZPZ = aerobus::zpz<29>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<27»; };  //
      NOLINT
04382     template<> struct ConwayPolynomial<31, 1> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<28»; };  // NOLINT
04383     template<> struct ConwayPolynomial<31, 2> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<29>, ZPZV<3»; };  // NOLINT
04384     template<> struct ConwayPolynomial<31, 3> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<28»; };  // NOLINT
04385     template<> struct ConwayPolynomial<31, 4> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<16>, ZPZV<3»; };  // NOLINT
04386     template<> struct ConwayPolynomial<31, 5> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<28»; };  // NOLINT
04387     template<> struct ConwayPolynomial<31, 6> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<16>, ZPZV<8>, ZPZV<3»; };  // NOLINT
04388     template<> struct ConwayPolynomial<31, 7> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<28»; };  // NOLINT
04389     template<> struct ConwayPolynomial<31, 8> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<25>, ZPZV<12>, ZPZV<24>, ZPZV<3»; };  //
      NOLINT
04390     template<> struct ConwayPolynomial<31, 9> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<20>, ZPZV<29>, ZPZV<28»; };
      // NOLINT
04391     template<> struct ConwayPolynomial<31, 10> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<30>, ZPZV<26>, ZPZV<13>, ZPZV<13>, ZPZV<13>,
      ZPZV<3»; };  // NOLINT
04392     template<> struct ConwayPolynomial<31, 11> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<20>, ZPZV<28»; };  // NOLINT
04393     template<> struct ConwayPolynomial<31, 12> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<14>, ZPZV<28>, ZPZV<2>, ZPZV<9>,
      ZPZV<25>, ZPZV<12>, ZPZV<3»; };  // NOLINT
04394     template<> struct ConwayPolynomial<31, 13> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<28»; };  // NOLINT
04395     template<> struct ConwayPolynomial<31, 14> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<5>, ZPZV<1>,
      ZPZV<1>, ZPZV<18>, ZPZV<18>, ZPZV<6>, ZPZV<3»; };  // NOLINT
04396     template<> struct ConwayPolynomial<31, 15> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<30>,
      ZPZV<29>, ZPZV<12>, ZPZV<13>, ZPZV<23>, ZPZV<25>, ZPZV<28»; };  // NOLINT
04397     template<> struct ConwayPolynomial<31, 16> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<28>,
      ZPZV<24>, ZPZV<26>, ZPZV<28>, ZPZV<11>, ZPZV<19>, ZPZV<27>, ZPZV<3»; };  // NOLINT
04398     template<> struct ConwayPolynomial<31, 17> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<28»; };  // NOLINT
04399     template<> struct ConwayPolynomial<31, 18> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<27>, ZPZV<5>, ZPZV<24>,
      ZPZV<2>, ZPZV<7>, ZPZV<12>, ZPZV<11>, ZPZV<25>, ZPZV<25>, ZPZV<10>, ZPZV<6>, ZPZV<3»; };  // NOLINT
04400     template<> struct ConwayPolynomial<31, 19> { using ZPZ = aerobus::zpz<31>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<28»; };  //
      NOLINT
04401     template<> struct ConwayPolynomial<37, 1> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<35»; };  // NOLINT
04402     template<> struct ConwayPolynomial<37, 2> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<33>, ZPZV<2»; };  // NOLINT
04403     template<> struct ConwayPolynomial<37, 3> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<35»; };  // NOLINT
04404     template<> struct ConwayPolynomial<37, 4> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<24>, ZPZV<2»; };  // NOLINT
04405     template<> struct ConwayPolynomial<37, 5> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<35»; };  // NOLINT
04406     template<> struct ConwayPolynomial<37, 6> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<35>, ZPZV<4>, ZPZV<30>, ZPZV<2»; };  // NOLINT
04407     template<> struct ConwayPolynomial<37, 7> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<35»; };  // NOLINT
04408     template<> struct ConwayPolynomial<37, 8> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<20>, ZPZV<27>, ZPZV<1>, ZPZV<2»; };  // NOLINT
04409     template<> struct ConwayPolynomial<37, 9> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<20>, ZPZV<32>, ZPZV<35»; };
      // NOLINT
04410     template<> struct ConwayPolynomial<37, 10> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<29>, ZPZV<18>, ZPZV<11>, ZPZV<4>,
      ZPZV<2»; };  // NOLINT
04411     template<> struct ConwayPolynomial<37, 11> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<2>, ZPZV<35»; };  // NOLINT
04412     template<> struct ConwayPolynomial<37, 12> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<31>, ZPZV<10>, ZPZV<23>, ZPZV<23>,
      ZPZV<18>, ZPZV<33>, ZPZV<2»; };  // NOLINT
04413     template<> struct ConwayPolynomial<37, 13> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<35»; };  // NOLINT
04414     template<> struct ConwayPolynomial<37, 14> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<35>, ZPZV<35>, ZPZV<1>,
      ZPZV<32>, ZPZV<16>, ZPZV<1>, ZPZV<9>, ZPZV<2»; };  // NOLINT
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04415     template<> struct ConwayPolynomial<37, 15> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<31>,
      ZPZV<28>, ZPZV<27>, ZPZV<13>, ZPZV<34>, ZPZV<33>, ZPZV<35>>; };  // NOLINT
04416     template<> struct ConwayPolynomial<37, 17> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<35>>; };  // NOLINT
04417     template<> struct ConwayPolynomial<37, 18> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<8>, ZPZV<19>, ZPZV<15>,
      ZPZV<1>, ZPZV<22>, ZPZV<20>, ZPZV<12>, ZPZV<32>, ZPZV<14>, ZPZV<27>, ZPZV<20>, ZPZV<2>>; };  // NOLINT
04418     template<> struct ConwayPolynomial<37, 19> { using ZPZ = aerobus::zpz<37>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<36>, ZPZV<23>, ZPZV<35>>; };  //
      NOLINT
04419     template<> struct ConwayPolynomial<41, 1> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<35>>; };  // NOLINT
04420     template<> struct ConwayPolynomial<41, 2> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<38>, ZPZV<6>>; };  // NOLINT
04421     template<> struct ConwayPolynomial<41, 3> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<35>>; };  // NOLINT
04422     template<> struct ConwayPolynomial<41, 4> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<23>, ZPZV<6>>; };  // NOLINT
04423     template<> struct ConwayPolynomial<41, 5> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<40>, ZPZV<14>, ZPZV<35>>; };  // NOLINT
04424     template<> struct ConwayPolynomial<41, 6> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<33>, ZPZV<39>, ZPZV<6>, ZPZV<6>>; };  // NOLINT
04425     template<> struct ConwayPolynomial<41, 7> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<35>>; };  // NOLINT
04426     template<> struct ConwayPolynomial<41, 8> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<32>, ZPZV<20>, ZPZV<6>, ZPZV<6>>; };  // NOLINT
04427     template<> struct ConwayPolynomial<41, 9> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<31>, ZPZV<5>, ZPZV<35>>; };
      // NOLINT
04428     template<> struct ConwayPolynomial<41, 10> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<31>, ZPZV<8>, ZPZV<20>, ZPZV<30>,
      ZPZV<6>>; };  // NOLINT
04429     template<> struct ConwayPolynomial<41, 11> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<20>, ZPZV<35>>; };  // NOLINT
04430     template<> struct ConwayPolynomial<41, 12> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<26>, ZPZV<13>, ZPZV<34>, ZPZV<24>,
      ZPZV<21>, ZPZV<27>, ZPZV<6>>; };  // NOLINT
04431     template<> struct ConwayPolynomial<41, 13> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<35>>; };  // NOLINT
04432     template<> struct ConwayPolynomial<41, 14> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<15>, ZPZV<4>,
      ZPZV<27>, ZPZV<11>, ZPZV<39>, ZPZV<10>, ZPZV<6>>; };  // NOLINT
04433     template<> struct ConwayPolynomial<41, 15> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<29>,
      ZPZV<16>, ZPZV<2>, ZPZV<35>, ZPZV<10>, ZPZV<21>, ZPZV<35>>; };  // NOLINT
04434     template<> struct ConwayPolynomial<41, 17> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<35>>; };  // NOLINT
04435     template<> struct ConwayPolynomial<41, 18> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<7>, ZPZV<20>,
      ZPZV<23>, ZPZV<35>, ZPZV<38>, ZPZV<24>, ZPZV<12>, ZPZV<29>, ZPZV<10>, ZPZV<6>, ZPZV<6>>; };  // NOLINT
04436     template<> struct ConwayPolynomial<41, 19> { using ZPZ = aerobus::zpz<41>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<35>>; };  //
      NOLINT
04437     template<> struct ConwayPolynomial<43, 1> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<40>>; };  // NOLINT
04438     template<> struct ConwayPolynomial<43, 2> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<42>, ZPZV<3>>; };  // NOLINT
04439     template<> struct ConwayPolynomial<43, 3> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<40>>; };  // NOLINT
04440     template<> struct ConwayPolynomial<43, 4> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<42>, ZPZV<3>>; };  // NOLINT
04441     template<> struct ConwayPolynomial<43, 5> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<40>>; };  // NOLINT
04442     template<> struct ConwayPolynomial<43, 6> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<28>, ZPZV<21>, ZPZV<3>>; };  // NOLINT
04443     template<> struct ConwayPolynomial<43, 7> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<42>, ZPZV<7>, ZPZV<40>>; };  // NOLINT
04444     template<> struct ConwayPolynomial<43, 8> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<39>, ZPZV<20>, ZPZV<24>, ZPZV<3>>; };  //
      NOLINT
04445     template<> struct ConwayPolynomial<43, 9> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<39>, ZPZV<1>, ZPZV<40>>; };
      // NOLINT
04446     template<> struct ConwayPolynomial<43, 10> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<26>, ZPZV<36>, ZPZV<5>, ZPZV<27>, ZPZV<24>,
      ZPZV<3>>; };  // NOLINT
04447     template<> struct ConwayPolynomial<43, 11> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<7>, ZPZV<40>>; };  // NOLINT
04448     template<> struct ConwayPolynomial<43, 12> { using ZPZ = aerobus::zpz<43>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<34>, ZPZV<27>, ZPZV<16>, ZPZV<17>, ZPZV<6>,
      ZPZV<23>, ZPZV<38>, ZPZV<3»; };  // NOLINT
04449     template<> struct ConwayPolynomial<43, 13> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<40»; };  // NOLINT
04450     template<> struct ConwayPolynomial<43, 14> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<38>, ZPZV<22>, ZPZV<24>,
      ZPZV<37>, ZPZV<18>, ZPZV<4>, ZPZV<19>, ZPZV<3»; };  // NOLINT
04451     template<> struct ConwayPolynomial<43, 15> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<37>,
      ZPZV<22>, ZPZV<42>, ZPZV<4>, ZPZV<15>, ZPZV<37>, ZPZV<40»; };  // NOLINT
04452     template<> struct ConwayPolynomial<43, 17> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<36>, ZPZV<40»; };  // NOLINT
04453     template<> struct ConwayPolynomial<43, 18> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<3>, ZPZV<28>, ZPZV<41>,
      ZPZV<24>, ZPZV<7>, ZPZV<24>, ZPZV<29>, ZPZV<16>, ZPZV<34>, ZPZV<37>, ZPZV<18>, ZPZV<3»; };  // NOLINT
04454     template<> struct ConwayPolynomial<43, 19> { using ZPZ = aerobus::zpz<43>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<30>, ZPZV<40»; };  //
      NOLINT
04455     template<> struct ConwayPolynomial<47, 1> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<42»; };  // NOLINT
04456     template<> struct ConwayPolynomial<47, 2> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<45>, ZPZV<5»; };  // NOLINT
04457     template<> struct ConwayPolynomial<47, 3> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<42»; };  // NOLINT
04458     template<> struct ConwayPolynomial<47, 4> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<40>, ZPZV<5»; };  // NOLINT
04459     template<> struct ConwayPolynomial<47, 5> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<42»; };  // NOLINT
04460     template<> struct ConwayPolynomial<47, 6> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<35>, ZPZV<9>, ZPZV<41>, ZPZV<5»; };  // NOLINT
04461     template<> struct ConwayPolynomial<47, 7> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<42»; };  // NOLINT
04462     template<> struct ConwayPolynomial<47, 8> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<29>, ZPZV<19>, ZPZV<3>, ZPZV<5»; };  // NOLINT
04463     template<> struct ConwayPolynomial<47, 9> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<19>, ZPZV<1>, ZPZV<42»; };
      // NOLINT
04464     template<> struct ConwayPolynomial<47, 10> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<42>, ZPZV<14>, ZPZV<18>, ZPZV<45>, ZPZV<45>,
      ZPZV<5»; };  // NOLINT
04465     template<> struct ConwayPolynomial<47, 11> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<6>, ZPZV<42»; };  // NOLINT
04466     template<> struct ConwayPolynomial<47, 12> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<46>, ZPZV<40>, ZPZV<35>, ZPZV<12>, ZPZV<46>,
      ZPZV<14>, ZPZV<9>, ZPZV<5»; };  // NOLINT
04467     template<> struct ConwayPolynomial<47, 13> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<42»; };  // NOLINT
04468     template<> struct ConwayPolynomial<47, 14> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<36>, ZPZV<20>, ZPZV<30>,
      ZPZV<17>, ZPZV<24>, ZPZV<9>, ZPZV<32>, ZPZV<5»; };  // NOLINT
04469     template<> struct ConwayPolynomial<47, 15> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<43>,
      ZPZV<31>, ZPZV<14>, ZPZV<42>, ZPZV<13>, ZPZV<17>, ZPZV<42»; };  // NOLINT
04470     template<> struct ConwayPolynomial<47, 17> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<42»; };  // NOLINT
04471     template<> struct ConwayPolynomial<47, 18> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<41>, ZPZV<42>,
      ZPZV<26>, ZPZV<44>, ZPZV<24>, ZPZV<22>, ZPZV<11>, ZPZV<5>, ZPZV<45>, ZPZV<33>, ZPZV<5»; };  // NOLINT
04472     template<> struct ConwayPolynomial<47, 19> { using ZPZ = aerobus::zpz<47>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<35>, ZPZV<42»; };  //
      NOLINT
04473     template<> struct ConwayPolynomial<53, 1> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<51»; };  // NOLINT
04474     template<> struct ConwayPolynomial<53, 2> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<49>, ZPZV<2»; };  // NOLINT
04475     template<> struct ConwayPolynomial<53, 3> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<51»; };  // NOLINT
04476     template<> struct ConwayPolynomial<53, 4> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<38>, ZPZV<2»; };  // NOLINT
04477     template<> struct ConwayPolynomial<53, 5> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<51»; };  // NOLINT
04478     template<> struct ConwayPolynomial<53, 6> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<7>, ZPZV<4>, ZPZV<45>, ZPZV<2»; };  // NOLINT
04479     template<> struct ConwayPolynomial<53, 7> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<51»; };  // NOLINT
04480     template<> struct ConwayPolynomial<53, 8> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<29>, ZPZV<18>, ZPZV<1>, ZPZV<2»; };  // NOLINT
04481     template<> struct ConwayPolynomial<53, 9> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<5>, ZPZV<51»; };
      // NOLINT
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04482     template<> struct ConwayPolynomial<53, 10> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<27>, ZPZV<15>, ZPZV<29>,
      ZPZV<2>>; };  // NOLINT
04483     template<> struct ConwayPolynomial<53, 11> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<15>, ZPZV<51>>; };  // NOLINT
04484     template<> struct ConwayPolynomial<53, 12> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<34>, ZPZV<4>, ZPZV<13>, ZPZV<10>, ZPZV<42>,
      ZPZV<34>, ZPZV<41>, ZPZV<2>>; };  // NOLINT
04485     template<> struct ConwayPolynomial<53, 13> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<52>, ZPZV<28>, ZPZV<51>>; };  // NOLINT
04486     template<> struct ConwayPolynomial<53, 14> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<45>, ZPZV<23>, ZPZV<52>,
      ZPZV<0>, ZPZV<37>, ZPZV<12>, ZPZV<23>, ZPZV<2>>; };  // NOLINT
04487     template<> struct ConwayPolynomial<53, 15> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<22>,
      ZPZV<31>, ZPZV<15>, ZPZV<11>, ZPZV<20>, ZPZV<4>, ZPZV<51>>; };  // NOLINT
04488     template<> struct ConwayPolynomial<53, 17> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<51>>; };  // NOLINT
04489     template<> struct ConwayPolynomial<53, 18> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<52>, ZPZV<31>, ZPZV<51>,
      ZPZV<27>, ZPZV<0>, ZPZV<39>, ZPZV<44>, ZPZV<6>, ZPZV<8>, ZPZV<16>, ZPZV<11>, ZPZV<2>>; };  // NOLINT
04490     template<> struct ConwayPolynomial<53, 19> { using ZPZ = aerobus::zpz<53>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<51>>; };  //
      NOLINT
04491     template<> struct ConwayPolynomial<59, 1> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<57>>; };  // NOLINT
04492     template<> struct ConwayPolynomial<59, 2> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<58>, ZPZV<2>>; };  // NOLINT
04493     template<> struct ConwayPolynomial<59, 3> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<57>>; };  // NOLINT
04494     template<> struct ConwayPolynomial<59, 4> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<40>, ZPZV<2>>; };  // NOLINT
04495     template<> struct ConwayPolynomial<59, 5> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<57>>; };  // NOLINT
04496     template<> struct ConwayPolynomial<59, 6> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<18>, ZPZV<38>, ZPZV<0>, ZPZV<2>>; };  // NOLINT
04497     template<> struct ConwayPolynomial<59, 7> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<57>>; };  // NOLINT
04498     template<> struct ConwayPolynomial<59, 8> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<32>, ZPZV<2>, ZPZV<50>, ZPZV<2>>; };  //
      NOLINT
04499     template<> struct ConwayPolynomial<59, 9> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<32>, ZPZV<47>, ZPZV<57>>; };
      // NOLINT
04500     template<> struct ConwayPolynomial<59, 10> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<28>, ZPZV<25>, ZPZV<4>, ZPZV<39>, ZPZV<15>,
      ZPZV<2>>; };  // NOLINT
04501     template<> struct ConwayPolynomial<59, 11> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<6>, ZPZV<57>>; };  // NOLINT
04502     template<> struct ConwayPolynomial<59, 12> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<39>, ZPZV<25>, ZPZV<51>, ZPZV<21>, ZPZV<38>,
      ZPZV<8>, ZPZV<1>, ZPZV<2>>; };  // NOLINT
04503     template<> struct ConwayPolynomial<59, 13> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<57>>; };  // NOLINT
04504     template<> struct ConwayPolynomial<59, 14> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<33>, ZPZV<51>, ZPZV<11>,
      ZPZV<13>, ZPZV<25>, ZPZV<32>, ZPZV<26>, ZPZV<2>>; };  // NOLINT
04505     template<> struct ConwayPolynomial<59, 15> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<57>,
      ZPZV<24>, ZPZV<23>, ZPZV<13>, ZPZV<39>, ZPZV<58>, ZPZV<57>>; };  // NOLINT
04506     template<> struct ConwayPolynomial<59, 17> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<57>>; };  // NOLINT
04507     template<> struct ConwayPolynomial<59, 18> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<37>, ZPZV<38>, ZPZV<27>,
      ZPZV<11>, ZPZV<14>, ZPZV<7>, ZPZV<44>, ZPZV<16>, ZPZV<47>, ZPZV<34>, ZPZV<32>, ZPZV<2>>; };  // NOLINT
04508     template<> struct ConwayPolynomial<59, 19> { using ZPZ = aerobus::zpz<59>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<57>>; };  //
      NOLINT
04509     template<> struct ConwayPolynomial<61, 1> { using ZPZ = aerobus::zpz<61>; using type =
      POLYV<ZPZV<1>, ZPZV<59>>; };  // NOLINT
04510     template<> struct ConwayPolynomial<61, 2> { using ZPZ = aerobus::zpz<61>; using type =
      POLYV<ZPZV<1>, ZPZV<60>, ZPZV<2>>; };  // NOLINT
04511     template<> struct ConwayPolynomial<61, 3> { using ZPZ = aerobus::zpz<61>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<59>>; };  // NOLINT
04512     template<> struct ConwayPolynomial<61, 4> { using ZPZ = aerobus::zpz<61>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<40>, ZPZV<2>>; };  // NOLINT
04513     template<> struct ConwayPolynomial<61, 5> { using ZPZ = aerobus::zpz<61>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<59>>; };  // NOLINT
04514     template<> struct ConwayPolynomial<61, 6> { using ZPZ = aerobus::zpz<61>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<49>, ZPZV<3>, ZPZV<29>, ZPZV<2»; };  // NOLINT
04515     template<> struct ConwayPolynomial<61, 7> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<59»; };  // NOLINT
04516     template<> struct ConwayPolynomial<61, 8> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<57>, ZPZV<1>, ZPZV<56>, ZPZV<2»; };  // NOLINT
04517     template<> struct ConwayPolynomial<61, 9> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<50>, ZPZV<18>, ZPZV<59»; };
    // NOLINT
04518     template<> struct ConwayPolynomial<61, 10> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<28>, ZPZV<15>, ZPZV<44>, ZPZV<16>, ZPZV<6>,
    ZPZV<2»; };  // NOLINT
04519     template<> struct ConwayPolynomial<61, 11> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<18>, ZPZV<59»; };  // NOLINT
04520     template<> struct ConwayPolynomial<61, 12> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<42>, ZPZV<33>, ZPZV<8>, ZPZV<38>, ZPZV<14>,
    ZPZV<1>, ZPZV<15>, ZPZV<2»; };  // NOLINT
04521     template<> struct ConwayPolynomial<61, 13> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<59»; };  // NOLINT
04522     template<> struct ConwayPolynomial<61, 14> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<48>, ZPZV<26>, ZPZV<11>,
    ZPZV<8>, ZPZV<30>, ZPZV<54>, ZPZV<48>, ZPZV<2»; };  // NOLINT
04523     template<> struct ConwayPolynomial<61, 15> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<39>,
    ZPZV<35>, ZPZV<44>, ZPZV<25>, ZPZV<23>, ZPZV<51>, ZPZV<59»; };  // NOLINT
04524     template<> struct ConwayPolynomial<61, 17> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<59»; };  // NOLINT
04525     template<> struct ConwayPolynomial<61, 18> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<35>, ZPZV<36>, ZPZV<13>,
    ZPZV<36>, ZPZV<4>, ZPZV<32>, ZPZV<57>, ZPZV<42>, ZPZV<25>, ZPZV<25>, ZPZV<52>, ZPZV<2»; };  // NOLINT
04526     template<> struct ConwayPolynomial<61, 19> { using ZPZ = aerobus::zpz<61>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<59»; };  //
    NOLINT
04527     template<> struct ConwayPolynomial<67, 1> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<65»; };  // NOLINT
04528     template<> struct ConwayPolynomial<67, 2> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<63>, ZPZV<2»; };  // NOLINT
04529     template<> struct ConwayPolynomial<67, 3> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<65»; };  // NOLINT
04530     template<> struct ConwayPolynomial<67, 4> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<54>, ZPZV<2»; };  // NOLINT
04531     template<> struct ConwayPolynomial<67, 5> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<65»; };  // NOLINT
04532     template<> struct ConwayPolynomial<67, 6> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<63>, ZPZV<49>, ZPZV<55>, ZPZV<2»; };  // NOLINT
04533     template<> struct ConwayPolynomial<67, 7> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<65»; };  // NOLINT
04534     template<> struct ConwayPolynomial<67, 8> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<46>, ZPZV<17>, ZPZV<64>, ZPZV<2»; };  //
    NOLINT
04535     template<> struct ConwayPolynomial<67, 9> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<25>, ZPZV<49>, ZPZV<55>, ZPZV<65»; };
    // NOLINT
04536     template<> struct ConwayPolynomial<67, 10> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<21>, ZPZV<0>, ZPZV<16>, ZPZV<7>, ZPZV<23>,
    ZPZV<2»; };  // NOLINT
04537     template<> struct ConwayPolynomial<67, 11> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<66>,
    ZPZV<9>, ZPZV<65»; };  // NOLINT
04538     template<> struct ConwayPolynomial<67, 12> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<57>, ZPZV<27>, ZPZV<4>, ZPZV<55>, ZPZV<64>,
    ZPZV<21>, ZPZV<27>, ZPZV<2»; };  // NOLINT
04539     template<> struct ConwayPolynomial<67, 13> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<22>, ZPZV<65»; };  // NOLINT
04540     template<> struct ConwayPolynomial<67, 14> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<22>, ZPZV<5>,
    ZPZV<56>, ZPZV<0>, ZPZV<1>, ZPZV<37>, ZPZV<2»; };  // NOLINT
04541     template<> struct ConwayPolynomial<67, 15> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<1>,
    ZPZV<52>, ZPZV<41>, ZPZV<20>, ZPZV<21>, ZPZV<46>, ZPZV<65»; };  // NOLINT
04542     template<> struct ConwayPolynomial<67, 17> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<65»; };  // NOLINT
04543     template<> struct ConwayPolynomial<67, 18> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<63>, ZPZV<52>, ZPZV<18>,
    ZPZV<33>, ZPZV<55>, ZPZV<28>, ZPZV<29>, ZPZV<51>, ZPZV<6>, ZPZV<59>, ZPZV<13>, ZPZV<2»; };  // NOLINT
04544     template<> struct ConwayPolynomial<67, 19> { using ZPZ = aerobus::zpz<67>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<65»; };  //
    NOLINT
04545     template<> struct ConwayPolynomial<71, 1> { using ZPZ = aerobus::zpz<71>; using type =
    POLYV<ZPZV<1>, ZPZV<64»; };  // NOLINT
04546     template<> struct ConwayPolynomial<71, 2> { using ZPZ = aerobus::zpz<71>; using type =
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      POLYV<ZPZV<1>, ZPZV<69>, ZPZV<7»; };  // NOLINT
04547     template<> struct ConwayPolynomial<71, 3> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<64»; };  // NOLINT
04548     template<> struct ConwayPolynomial<71, 4> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<41>, ZPZV<7»; };  // NOLINT
04549     template<> struct ConwayPolynomial<71, 5> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<64»; };  // NOLINT
04550     template<> struct ConwayPolynomial<71, 6> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<10>, ZPZV<13>, ZPZV<29>, ZPZV<7»; };  // NOLINT
04551     template<> struct ConwayPolynomial<71, 7> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<64»; };  // NOLINT
04552     template<> struct ConwayPolynomial<71, 8> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<53>, ZPZV<22>, ZPZV<19>, ZPZV<7»; };  //
      NOLINT
04553     template<> struct ConwayPolynomial<71, 9> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<43>, ZPZV<62>, ZPZV<64»; };
      // NOLINT
04554     template<> struct ConwayPolynomial<71, 10> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<53>, ZPZV<17>, ZPZV<26>, ZPZV<1>, ZPZV<40>,
      ZPZV<7»; };  // NOLINT
04555     template<> struct ConwayPolynomial<71, 11> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<48>, ZPZV<64»; };  // NOLINT
04556     template<> struct ConwayPolynomial<71, 12> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<28>, ZPZV<29>, ZPZV<55>, ZPZV<21>,
      ZPZV<58>, ZPZV<23>, ZPZV<7»; };  // NOLINT
04557     template<> struct ConwayPolynomial<71, 13> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<27>, ZPZV<64»; };  // NOLINT
04558     template<> struct ConwayPolynomial<71, 15> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<28>,
      ZPZV<32>, ZPZV<18>, ZPZV<52>, ZPZV<67>, ZPZV<49>, ZPZV<64»; };  // NOLINT
04559     template<> struct ConwayPolynomial<71, 17> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<64»; };  // NOLINT
04560     template<> struct ConwayPolynomial<71, 19> { using ZPZ = aerobus::zpz<71>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<64»; };  //
      NOLINT
04561     template<> struct ConwayPolynomial<73, 1> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<68»; };  // NOLINT
04562     template<> struct ConwayPolynomial<73, 2> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<70>, ZPZV<5»; };  // NOLINT
04563     template<> struct ConwayPolynomial<73, 3> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<68»; };  // NOLINT
04564     template<> struct ConwayPolynomial<73, 4> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<16>, ZPZV<56>, ZPZV<5»; };  // NOLINT
04565     template<> struct ConwayPolynomial<73, 5> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<68»; };  // NOLINT
04566     template<> struct ConwayPolynomial<73, 6> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<45>, ZPZV<23>, ZPZV<48>, ZPZV<5»; };  // NOLINT
04567     template<> struct ConwayPolynomial<73, 7> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<68»; };  // NOLINT
04568     template<> struct ConwayPolynomial<73, 8> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<53>, ZPZV<39>, ZPZV<18>, ZPZV<5»; };  //
      NOLINT
04569     template<> struct ConwayPolynomial<73, 9> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<72>, ZPZV<15>, ZPZV<68»; };
      // NOLINT
04570     template<> struct ConwayPolynomial<73, 10> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<15>, ZPZV<23>, ZPZV<33>, ZPZV<32>, ZPZV<69>,
      ZPZV<5»; };  // NOLINT
04571     template<> struct ConwayPolynomial<73, 11> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<5>, ZPZV<68»; };  // NOLINT
04572     template<> struct ConwayPolynomial<73, 12> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<69>, ZPZV<52>, ZPZV<26>, ZPZV<20>, ZPZV<46>,
      ZPZV<29>, ZPZV<25>, ZPZV<5»; };  // NOLINT
04573     template<> struct ConwayPolynomial<73, 13> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<68»; };  // NOLINT
04574     template<> struct ConwayPolynomial<73, 15> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<10>, ZPZV<33>, ZPZV<57>, ZPZV<57>, ZPZV<62>, ZPZV<68»; };  // NOLINT
04575     template<> struct ConwayPolynomial<73, 17> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<68»; };  // NOLINT
04576     template<> struct ConwayPolynomial<73, 19> { using ZPZ = aerobus::zpz<73>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<25>, ZPZV<68»; };  //
      NOLINT
04577     template<> struct ConwayPolynomial<79, 1> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<76»; };  // NOLINT
04578     template<> struct ConwayPolynomial<79, 2> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<78>, ZPZV<3»; };  // NOLINT
04579     template<> struct ConwayPolynomial<79, 3> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<76»; };  // NOLINT
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04580     template<> struct ConwayPolynomial<79, 4> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<66>, ZPZV<3»; };  // NOLINT
04581     template<> struct ConwayPolynomial<79, 5> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<76»; };  // NOLINT
04582     template<> struct ConwayPolynomial<79, 6> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<28>, ZPZV<68>, ZPZV<3»; };  // NOLINT
04583     template<> struct ConwayPolynomial<79, 7> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<76»; };  // NOLINT
04584     template<> struct ConwayPolynomial<79, 8> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<60>, ZPZV<59>, ZPZV<48>, ZPZV<3»; };  //
      NOLINT
04585     template<> struct ConwayPolynomial<79, 9> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<57>, ZPZV<19>, ZPZV<76»; };
      // NOLINT
04586     template<> struct ConwayPolynomial<79, 10> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<44>, ZPZV<51>, ZPZV<1>, ZPZV<30>, ZPZV<42>,
      ZPZV<3»; };  // NOLINT
04587     template<> struct ConwayPolynomial<79, 11> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<3>, ZPZV<76»; };  // NOLINT
04588     template<> struct ConwayPolynomial<79, 12> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<29>, ZPZV<45>, ZPZV<52>, ZPZV<7>, ZPZV<40>,
      ZPZV<59>, ZPZV<62>, ZPZV<3»; };  // NOLINT
04589     template<> struct ConwayPolynomial<79, 13> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<78>, ZPZV<4>, ZPZV<76»; };  // NOLINT
04590     template<> struct ConwayPolynomial<79, 17> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<25>, ZPZV<76»; };  // NOLINT
04591     template<> struct ConwayPolynomial<79, 19> { using ZPZ = aerobus::zpz<79>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<25>, ZPZV<76»; };  //
      NOLINT
04592     template<> struct ConwayPolynomial<83, 1> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<81»; };  // NOLINT
04593     template<> struct ConwayPolynomial<83, 2> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<82>, ZPZV<2»; };  // NOLINT
04594     template<> struct ConwayPolynomial<83, 3> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<81»; };  // NOLINT
04595     template<> struct ConwayPolynomial<83, 4> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<42>, ZPZV<2»; };  // NOLINT
04596     template<> struct ConwayPolynomial<83, 5> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<81»; };  // NOLINT
04597     template<> struct ConwayPolynomial<83, 6> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<76>, ZPZV<32>, ZPZV<17>, ZPZV<2»; };  // NOLINT
04598     template<> struct ConwayPolynomial<83, 7> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<81»; };  // NOLINT
04599     template<> struct ConwayPolynomial<83, 8> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<65>, ZPZV<23>, ZPZV<42>, ZPZV<2»; };  //
      NOLINT
04600     template<> struct ConwayPolynomial<83, 9> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<24>, ZPZV<18>, ZPZV<81»; };
      // NOLINT
04601     template<> struct ConwayPolynomial<83, 10> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<0>, ZPZV<73>, ZPZV<0>, ZPZV<53>,
      ZPZV<2»; };  // NOLINT
04602     template<> struct ConwayPolynomial<83, 11> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<17>, ZPZV<81»; };  // NOLINT
04603     template<> struct ConwayPolynomial<83, 12> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<35>, ZPZV<12>, ZPZV<31>, ZPZV<19>, ZPZV<65>,
      ZPZV<55>, ZPZV<75>, ZPZV<2»; };  // NOLINT
04604     template<> struct ConwayPolynomial<83, 13> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<81»; };  // NOLINT
04605     template<> struct ConwayPolynomial<83, 17> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<81»; };  // NOLINT
04606     template<> struct ConwayPolynomial<83, 19> { using ZPZ = aerobus::zpz<83>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<47>, ZPZV<81»; };  //
      NOLINT
04607     template<> struct ConwayPolynomial<89, 1> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<86»; };  // NOLINT
04608     template<> struct ConwayPolynomial<89, 2> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<82>, ZPZV<3»; };  // NOLINT
04609     template<> struct ConwayPolynomial<89, 3> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<86»; };  // NOLINT
04610     template<> struct ConwayPolynomial<89, 4> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<72>, ZPZV<3»; };  // NOLINT
04611     template<> struct ConwayPolynomial<89, 5> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<86»; };  // NOLINT
04612     template<> struct ConwayPolynomial<89, 6> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<82>, ZPZV<80>, ZPZV<15>, ZPZV<3»; };  // NOLINT
04613     template<> struct ConwayPolynomial<89, 7> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<86»; };  // NOLINT
04614     template<> struct ConwayPolynomial<89, 8> { using ZPZ = aerobus::zpz<89>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<65>, ZPZV<40>, ZPZV<79>, ZPZV<3»; };  //
      NOLINT
04615     template<> struct ConwayPolynomial<89, 9> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<12>, ZPZV<6>, ZPZV<86»; };
      // NOLINT
04616     template<> struct ConwayPolynomial<89, 10> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<16>, ZPZV<33>, ZPZV<82>, ZPZV<52>, ZPZV<4>,
      ZPZV<3»; };  // NOLINT
04617     template<> struct ConwayPolynomial<89, 11> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<88>,
      ZPZV<26>, ZPZV<86»; };  // NOLINT
04618     template<> struct ConwayPolynomial<89, 12> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<85>, ZPZV<15>, ZPZV<44>, ZPZV<51>, ZPZV<8>,
      ZPZV<70>, ZPZV<52>, ZPZV<3»; };  // NOLINT
04619     template<> struct ConwayPolynomial<89, 13> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<86»; };  // NOLINT
04620     template<> struct ConwayPolynomial<89, 17> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<20>, ZPZV<86»; };  // NOLINT
04621     template<> struct ConwayPolynomial<89, 19> { using ZPZ = aerobus::zpz<89>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<34>, ZPZV<86»; };  //
      NOLINT
04622     template<> struct ConwayPolynomial<97, 1> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<92»; };  // NOLINT
04623     template<> struct ConwayPolynomial<97, 2> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<96>, ZPZV<5»; };  // NOLINT
04624     template<> struct ConwayPolynomial<97, 3> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<92»; };  // NOLINT
04625     template<> struct ConwayPolynomial<97, 4> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<80>, ZPZV<5»; };  // NOLINT
04626     template<> struct ConwayPolynomial<97, 5> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<92»; };  // NOLINT
04627     template<> struct ConwayPolynomial<97, 6> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<92>, ZPZV<58>, ZPZV<88>, ZPZV<5»; };  // NOLINT
04628     template<> struct ConwayPolynomial<97, 7> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<92»; };  // NOLINT
04629     template<> struct ConwayPolynomial<97, 8> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<65>, ZPZV<1>, ZPZV<32>, ZPZV<5»; };  // NOLINT
04630     template<> struct ConwayPolynomial<97, 9> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<59>, ZPZV<7>, ZPZV<92»; };
      // NOLINT
04631     template<> struct ConwayPolynomial<97, 10> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<22>, ZPZV<66>, ZPZV<34>, ZPZV<34>, ZPZV<20>,
      ZPZV<5»; };  // NOLINT
04632     template<> struct ConwayPolynomial<97, 11> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<5>, ZPZV<92»; };  // NOLINT
04633     template<> struct ConwayPolynomial<97, 12> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<30>, ZPZV<59>, ZPZV<81>, ZPZV<0>, ZPZV<86>,
      ZPZV<78>, ZPZV<94>, ZPZV<5»; };  // NOLINT
04634     template<> struct ConwayPolynomial<97, 13> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<92»; };  // NOLINT
04635     template<> struct ConwayPolynomial<97, 17> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<92»; };  // NOLINT
04636     template<> struct ConwayPolynomial<97, 19> { using ZPZ = aerobus::zpz<97>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<92»; };  //
      NOLINT
04637     template<> struct ConwayPolynomial<101, 1> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<99»; };  // NOLINT
04638     template<> struct ConwayPolynomial<101, 2> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<97>, ZPZV<2»; };  // NOLINT
04639     template<> struct ConwayPolynomial<101, 3> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<99»; };  // NOLINT
04640     template<> struct ConwayPolynomial<101, 4> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<78>, ZPZV<2»; };  // NOLINT
04641     template<> struct ConwayPolynomial<101, 5> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<99»; };  // NOLINT
04642     template<> struct ConwayPolynomial<101, 6> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<90>, ZPZV<20>, ZPZV<67>, ZPZV<2»; };  // NOLINT
04643     template<> struct ConwayPolynomial<101, 7> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<99»; };  // NOLINT
04644     template<> struct ConwayPolynomial<101, 8> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<76>, ZPZV<29>, ZPZV<24>, ZPZV<2»; };  //
      NOLINT
04645     template<> struct ConwayPolynomial<101, 9> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<64>, ZPZV<47>, ZPZV<99»; };
      // NOLINT
04646     template<> struct ConwayPolynomial<101, 10> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<67>, ZPZV<49>, ZPZV<100>, ZPZV<100>, ZPZV<52>,
      ZPZV<2»; };  // NOLINT
04647     template<> struct ConwayPolynomial<101, 11> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<31>, ZPZV<99»; };  // NOLINT
04648     template<> struct ConwayPolynomial<101, 12> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<79>, ZPZV<64>, ZPZV<39>, ZPZV<78>, ZPZV<48>,
      ZPZV<84>, ZPZV<21>, ZPZV<2»; };  // NOLINT
04649     template<> struct ConwayPolynomial<101, 13> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<99»; };  // NOLINT
04650     template<> struct ConwayPolynomial<101, 17> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<31>, ZPZV<99»; };  // NOLINT
04651     template<> struct ConwayPolynomial<101, 19> { using ZPZ = aerobus::zpz<101>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<99»; };  //
      NOLINT
04652     template<> struct ConwayPolynomial<103, 1> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<98»; };  // NOLINT
04653     template<> struct ConwayPolynomial<103, 2> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<102>, ZPZV<5»; };  // NOLINT
04654     template<> struct ConwayPolynomial<103, 3> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<98»; };  // NOLINT
04655     template<> struct ConwayPolynomial<103, 4> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<88>, ZPZV<5»; };  // NOLINT
04656     template<> struct ConwayPolynomial<103, 5> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<98»; };  // NOLINT
04657     template<> struct ConwayPolynomial<103, 6> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<96>, ZPZV<9>, ZPZV<30>, ZPZV<5»; };  // NOLINT
04658     template<> struct ConwayPolynomial<103, 7> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<98»; };  // NOLINT
04659     template<> struct ConwayPolynomial<103, 8> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<70>, ZPZV<71>, ZPZV<49>, ZPZV<5»; };  //
      NOLINT
04660     template<> struct ConwayPolynomial<103, 9> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<97>, ZPZV<51>, ZPZV<98»; };
      // NOLINT
04661     template<> struct ConwayPolynomial<103, 10> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<101>, ZPZV<86>, ZPZV<101>, ZPZV<94>, ZPZV<11>,
      ZPZV<5»; };  // NOLINT
04662     template<> struct ConwayPolynomial<103, 11> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<5>, ZPZV<98»; };  // NOLINT
04663     template<> struct ConwayPolynomial<103, 12> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<74>, ZPZV<23>, ZPZV<94>, ZPZV<20>, ZPZV<81>,
      ZPZV<29>, ZPZV<88>, ZPZV<5»; };  // NOLINT
04664     template<> struct ConwayPolynomial<103, 13> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<98»; };  // NOLINT
04665     template<> struct ConwayPolynomial<103, 17> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<102>, ZPZV<8>, ZPZV<98»; };  // NOLINT
04666     template<> struct ConwayPolynomial<103, 19> { using ZPZ = aerobus::zpz<103>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<98»; };  //
      NOLINT
04667     template<> struct ConwayPolynomial<107, 1> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<105»; };  // NOLINT
04668     template<> struct ConwayPolynomial<107, 2> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<103>, ZPZV<2»; };  // NOLINT
04669     template<> struct ConwayPolynomial<107, 3> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<105»; };  // NOLINT
04670     template<> struct ConwayPolynomial<107, 4> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<13>, ZPZV<79>, ZPZV<2»; };  // NOLINT
04671     template<> struct ConwayPolynomial<107, 5> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<105»; };  // NOLINT
04672     template<> struct ConwayPolynomial<107, 6> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<52>, ZPZV<22>, ZPZV<79>, ZPZV<2»; };  // NOLINT
04673     template<> struct ConwayPolynomial<107, 7> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<105»; };  // NOLINT
04674     template<> struct ConwayPolynomial<107, 8> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<105>, ZPZV<24>, ZPZV<95>, ZPZV<2»; };  //
      NOLINT
04675     template<> struct ConwayPolynomial<107, 9> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<3>, ZPZV<66>, ZPZV<105»; };
      // NOLINT
04676     template<> struct ConwayPolynomial<107, 10> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<94>, ZPZV<61>, ZPZV<83>, ZPZV<83>, ZPZV<95>,
      ZPZV<2»; };  // NOLINT
04677     template<> struct ConwayPolynomial<107, 11> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<8>, ZPZV<105»; };  // NOLINT
04678     template<> struct ConwayPolynomial<107, 12> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<37>, ZPZV<48>, ZPZV<6>, ZPZV<0>, ZPZV<61>,
      ZPZV<42>, ZPZV<57>, ZPZV<2»; };  // NOLINT
04679     template<> struct ConwayPolynomial<107, 13> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<105»; };  // NOLINT
04680     template<> struct ConwayPolynomial<107, 17> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<105»; };  // NOLINT
04681     template<> struct ConwayPolynomial<107, 19> { using ZPZ = aerobus::zpz<107>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<105»; };  //
      NOLINT
04682     template<> struct ConwayPolynomial<109, 1> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<103»; };  // NOLINT
04683     template<> struct ConwayPolynomial<109, 2> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<108>, ZPZV<6»; };  // NOLINT
04684     template<> struct ConwayPolynomial<109, 3> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<103»; };  // NOLINT
04685     template<> struct ConwayPolynomial<109, 4> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<98>, ZPZV<6»; };  // NOLINT
04686     template<> struct ConwayPolynomial<109, 5> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<103»; };  // NOLINT
04687     template<> struct ConwayPolynomial<109, 6> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<107>, ZPZV<102>, ZPZV<66>, ZPZV<6»; };  // NOLINT
04688     template<> struct ConwayPolynomial<109, 7> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<103»; };  // NOLINT
04689     template<> struct ConwayPolynomial<109, 8> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<102>, ZPZV<34>, ZPZV<86>, ZPZV<6»; };  //
      NOLINT
04690     template<> struct ConwayPolynomial<109, 9> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<93>, ZPZV<87>, ZPZV<103»; };
      // NOLINT
04691     template<> struct ConwayPolynomial<109, 10> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<71>, ZPZV<55>, ZPZV<16>, ZPZV<75>, ZPZV<69>,
      ZPZV<6»; };  // NOLINT
04692     template<> struct ConwayPolynomial<109, 11> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<11>, ZPZV<103»; };  // NOLINT
04693     template<> struct ConwayPolynomial<109, 12> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<50>, ZPZV<53>, ZPZV<37>, ZPZV<8>, ZPZV<65>,
      ZPZV<103>, ZPZV<28>, ZPZV<6»; };  // NOLINT
04694     template<> struct ConwayPolynomial<109, 13> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<103»; };  // NOLINT
04695     template<> struct ConwayPolynomial<109, 17> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<103»; };  // NOLINT
04696     template<> struct ConwayPolynomial<109, 19> { using ZPZ = aerobus::zpz<109>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<103»; };  //
      NOLINT
04697     template<> struct ConwayPolynomial<113, 1> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<110»; };  // NOLINT
04698     template<> struct ConwayPolynomial<113, 2> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<101>, ZPZV<3»; };  // NOLINT
04699     template<> struct ConwayPolynomial<113, 3> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<110»; };  // NOLINT
04700     template<> struct ConwayPolynomial<113, 4> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<62>, ZPZV<3»; };  // NOLINT
04701     template<> struct ConwayPolynomial<113, 5> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<110»; };  // NOLINT
04702     template<> struct ConwayPolynomial<113, 6> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<59>, ZPZV<30>, ZPZV<71>, ZPZV<3»; };  // NOLINT
04703     template<> struct ConwayPolynomial<113, 7> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<110»; };  // NOLINT
04704     template<> struct ConwayPolynomial<113, 8> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<98>, ZPZV<38>, ZPZV<28>, ZPZV<3»; };  //
      NOLINT
04705     template<> struct ConwayPolynomial<113, 9> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<87>, ZPZV<71>, ZPZV<110»; };
      // NOLINT
04706     template<> struct ConwayPolynomial<113, 10> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<108>, ZPZV<57>, ZPZV<45>, ZPZV<83>, ZPZV<56>,
      ZPZV<3»; };  // NOLINT
04707     template<> struct ConwayPolynomial<113, 11> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<3>, ZPZV<110»; };  // NOLINT
04708     template<> struct ConwayPolynomial<113, 12> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<23>, ZPZV<62>, ZPZV<4>, ZPZV<98>, ZPZV<56>,
      ZPZV<10>, ZPZV<27>, ZPZV<3»; };  // NOLINT
04709     template<> struct ConwayPolynomial<113, 13> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<110»; };  // NOLINT
04710     template<> struct ConwayPolynomial<113, 17> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<110»; };  // NOLINT
04711     template<> struct ConwayPolynomial<113, 19> { using ZPZ = aerobus::zpz<113>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<22>, ZPZV<110»; };  //
      NOLINT
04712     template<> struct ConwayPolynomial<127, 1> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<124»; };  // NOLINT
04713     template<> struct ConwayPolynomial<127, 2> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<126>, ZPZV<3»; };  // NOLINT
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04714     template<> struct ConwayPolynomial<127, 3> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<124»; };  // NOLINT
04715     template<> struct ConwayPolynomial<127, 4> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<97>, ZPZV<3»; };  // NOLINT
04716     template<> struct ConwayPolynomial<127, 5> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<124»; };  // NOLINT
04717     template<> struct ConwayPolynomial<127, 6> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<84>, ZPZV<115>, ZPZV<82>, ZPZV<3»; };  // NOLINT
04718     template<> struct ConwayPolynomial<127, 7> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<124»; };  // NOLINT
04719     template<> struct ConwayPolynomial<127, 8> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<104>, ZPZV<55>, ZPZV<8>, ZPZV<3»; };  //
      NOLINT
04720     template<> struct ConwayPolynomial<127, 9> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<119>, ZPZV<126>, ZPZV<124»;
      };  // NOLINT
04721     template<> struct ConwayPolynomial<127, 10> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<107>, ZPZV<64>, ZPZV<95>, ZPZV<60>, ZPZV<4>,
      ZPZV<3»; };  // NOLINT
04722     template<> struct ConwayPolynomial<127, 11> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<11>, ZPZV<124»; };  // NOLINT
04723     template<> struct ConwayPolynomial<127, 12> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<119>, ZPZV<25>, ZPZV<33>, ZPZV<97>, ZPZV<15>,
      ZPZV<99>, ZPZV<8>, ZPZV<3»; };  // NOLINT
04724     template<> struct ConwayPolynomial<127, 13> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<124»; };  // NOLINT
04725     template<> struct ConwayPolynomial<127, 17> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<124»; };  // NOLINT
04726     template<> struct ConwayPolynomial<127, 19> { using ZPZ = aerobus::zpz<127>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<30>, ZPZV<124»; };  //
      NOLINT
04727     template<> struct ConwayPolynomial<131, 1> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<129»; };  // NOLINT
04728     template<> struct ConwayPolynomial<131, 2> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<127>, ZPZV<2»; };  // NOLINT
04729     template<> struct ConwayPolynomial<131, 3> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<129»; };  // NOLINT
04730     template<> struct ConwayPolynomial<131, 4> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<109>, ZPZV<2»; };  // NOLINT
04731     template<> struct ConwayPolynomial<131, 5> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<129»; };  // NOLINT
04732     template<> struct ConwayPolynomial<131, 6> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<66>, ZPZV<4>, ZPZV<22>, ZPZV<2»; };  // NOLINT
04733     template<> struct ConwayPolynomial<131, 7> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<129»; };  // NOLINT
04734     template<> struct ConwayPolynomial<131, 8> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<72>, ZPZV<116>, ZPZV<104>, ZPZV<2»; };  //
      NOLINT
04735     template<> struct ConwayPolynomial<131, 9> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<6>, ZPZV<19>, ZPZV<129»; };
      // NOLINT
04736     template<> struct ConwayPolynomial<131, 10> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<124>, ZPZV<97>, ZPZV<9>, ZPZV<126>, ZPZV<44>,
      ZPZV<2»; };  // NOLINT
04737     template<> struct ConwayPolynomial<131, 11> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<6>, ZPZV<129»; };  // NOLINT
04738     template<> struct ConwayPolynomial<131, 12> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<50>, ZPZV<122>, ZPZV<40>, ZPZV<83>, ZPZV<125>,
      ZPZV<28>, ZPZV<103>, ZPZV<2»; };  // NOLINT
04739     template<> struct ConwayPolynomial<131, 13> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<129»; };  // NOLINT
04740     template<> struct ConwayPolynomial<131, 17> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<129»; };  // NOLINT
04741     template<> struct ConwayPolynomial<131, 19> { using ZPZ = aerobus::zpz<131>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<129»; };  //
      NOLINT
04742     template<> struct ConwayPolynomial<137, 1> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<134»; };  // NOLINT
04743     template<> struct ConwayPolynomial<137, 2> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<131>, ZPZV<3»; };  // NOLINT
04744     template<> struct ConwayPolynomial<137, 3> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<134»; };  // NOLINT
04745     template<> struct ConwayPolynomial<137, 4> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<95>, ZPZV<3»; };  // NOLINT
04746     template<> struct ConwayPolynomial<137, 5> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<134»; };  // NOLINT
04747     template<> struct ConwayPolynomial<137, 6> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<116>, ZPZV<102>, ZPZV<3>, ZPZV<3»; };  // NOLINT
04748     template<> struct ConwayPolynomial<137, 7> { using ZPZ = aerobus::zpz<137>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<134»; };  // NOLINT
04749     template<> struct ConwayPolynomial<137, 8> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<105>, ZPZV<21>, ZPZV<34>, ZPZV<3»; };  //
      NOLINT
04750     template<> struct ConwayPolynomial<137, 9> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<80>, ZPZV<122>, ZPZV<134»;
      };  // NOLINT
04751     template<> struct ConwayPolynomial<137, 10> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<0>, ZPZV<20>, ZPZV<67>, ZPZV<93>, ZPZV<119>,
      ZPZV<3»; };  // NOLINT
04752     template<> struct ConwayPolynomial<137, 11> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<1>, ZPZV<134»; };  // NOLINT
04753     template<> struct ConwayPolynomial<137, 12> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<61>, ZPZV<40>, ZPZV<40>, ZPZV<12>, ZPZV<36>,
      ZPZV<135>, ZPZV<61>, ZPZV<3»; };  // NOLINT
04754     template<> struct ConwayPolynomial<137, 13> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<134»; };  // NOLINT
04755     template<> struct ConwayPolynomial<137, 17> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<136>, ZPZV<4>, ZPZV<134»; };  // NOLINT
04756     template<> struct ConwayPolynomial<137, 19> { using ZPZ = aerobus::zpz<137>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<134»; };  //
      NOLINT
04757     template<> struct ConwayPolynomial<139, 1> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<137»; };  // NOLINT
04758     template<> struct ConwayPolynomial<139, 2> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<138>, ZPZV<2»; };  // NOLINT
04759     template<> struct ConwayPolynomial<139, 3> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<137»; };  // NOLINT
04760     template<> struct ConwayPolynomial<139, 4> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<96>, ZPZV<2»; };  // NOLINT
04761     template<> struct ConwayPolynomial<139, 5> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<137»; };  // NOLINT
04762     template<> struct ConwayPolynomial<139, 6> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<46>, ZPZV<10>, ZPZV<118>, ZPZV<2»; };  // NOLINT
04763     template<> struct ConwayPolynomial<139, 7> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<137»; };  // NOLINT
04764     template<> struct ConwayPolynomial<139, 8> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<103>, ZPZV<36>, ZPZV<21>, ZPZV<2»; };  //
      NOLINT
04765     template<> struct ConwayPolynomial<139, 9> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<70>, ZPZV<87>, ZPZV<137»; };
      // NOLINT
04766     template<> struct ConwayPolynomial<139, 10> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<110>, ZPZV<48>, ZPZV<130>, ZPZV<66>,
      ZPZV<106>, ZPZV<2»; };  // NOLINT
04767     template<> struct ConwayPolynomial<139, 11> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<7>, ZPZV<137»; };  // NOLINT
04768     template<> struct ConwayPolynomial<139, 12> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<120>, ZPZV<75>, ZPZV<41>, ZPZV<77>, ZPZV<106>,
      ZPZV<8>, ZPZV<10>, ZPZV<2»; };  // NOLINT
04769     template<> struct ConwayPolynomial<139, 13> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<22>, ZPZV<137»; };  // NOLINT
04770     template<> struct ConwayPolynomial<139, 17> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<137»; };  // NOLINT
04771     template<> struct ConwayPolynomial<139, 19> { using ZPZ = aerobus::zpz<139>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<23>, ZPZV<137»; };  //
      NOLINT
04772     template<> struct ConwayPolynomial<149, 1> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<147»; };  // NOLINT
04773     template<> struct ConwayPolynomial<149, 2> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<145>, ZPZV<2»; };  // NOLINT
04774     template<> struct ConwayPolynomial<149, 3> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<147»; };  // NOLINT
04775     template<> struct ConwayPolynomial<149, 4> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<107>, ZPZV<2»; };  // NOLINT
04776     template<> struct ConwayPolynomial<149, 5> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<147»; };  // NOLINT
04777     template<> struct ConwayPolynomial<149, 6> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<105>, ZPZV<33>, ZPZV<55>, ZPZV<2»; };  // NOLINT
04778     template<> struct ConwayPolynomial<149, 7> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<147»; };  // NOLINT
04779     template<> struct ConwayPolynomial<149, 8> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<140>, ZPZV<25>, ZPZV<123>, ZPZV<2»; };  //
      NOLINT
04780     template<> struct ConwayPolynomial<149, 9> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<146>, ZPZV<20>, ZPZV<147»;
      };  // NOLINT
04781     template<> struct ConwayPolynomial<149, 10> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<74>, ZPZV<42>, ZPZV<148>, ZPZV<143>, ZPZV<51>,
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      ZPZV<2»; };  // NOLINT
04782     template<> struct ConwayPolynomial<149, 11> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<33>, ZPZV<147»; };  // NOLINT
04783     template<> struct ConwayPolynomial<149, 12> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<121>, ZPZV<91>, ZPZV<52>, ZPZV<9>,
      ZPZV<104>, ZPZV<110>, ZPZV<2»; };  // NOLINT
04784     template<> struct ConwayPolynomial<149, 13> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<147»; };  // NOLINT
04785     template<> struct ConwayPolynomial<149, 17> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<29>, ZPZV<147»; };  // NOLINT
04786     template<> struct ConwayPolynomial<149, 19> { using ZPZ = aerobus::zpz<149>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<147»; };  //
      NOLINT
04787     template<> struct ConwayPolynomial<151, 1> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<145»; };  // NOLINT
04788     template<> struct ConwayPolynomial<151, 2> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<149>, ZPZV<6»; };  // NOLINT
04789     template<> struct ConwayPolynomial<151, 3> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<145»; };  // NOLINT
04790     template<> struct ConwayPolynomial<151, 4> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<13>, ZPZV<89>, ZPZV<6»; };  // NOLINT
04791     template<> struct ConwayPolynomial<151, 5> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<145»; };  // NOLINT
04792     template<> struct ConwayPolynomial<151, 6> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<125>, ZPZV<18>, ZPZV<15>, ZPZV<6»; };  // NOLINT
04793     template<> struct ConwayPolynomial<151, 7> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<145»; };  // NOLINT
04794     template<> struct ConwayPolynomial<151, 8> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<140>, ZPZV<122>, ZPZV<43>, ZPZV<6»; };  //
      NOLINT
04795     template<> struct ConwayPolynomial<151, 9> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<126>, ZPZV<96>, ZPZV<145»;
      };  // NOLINT
04796     template<> struct ConwayPolynomial<151, 10> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<21>, ZPZV<104>, ZPZV<49>, ZPZV<20>, ZPZV<142>,
      ZPZV<6»; };  // NOLINT
04797     template<> struct ConwayPolynomial<151, 11> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<1>, ZPZV<145»; };  // NOLINT
04798     template<> struct ConwayPolynomial<151, 12> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<109>, ZPZV<121>, ZPZV<101>, ZPZV<6>, ZPZV<77>,
      ZPZV<107>, ZPZV<147>, ZPZV<6»; };  // NOLINT
04799     template<> struct ConwayPolynomial<151, 13> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<145»; };  // NOLINT
04800     template<> struct ConwayPolynomial<151, 17> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<145»; };  // NOLINT
04801     template<> struct ConwayPolynomial<151, 19> { using ZPZ = aerobus::zpz<151>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<145»; };  //
      NOLINT
04802     template<> struct ConwayPolynomial<157, 1> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<152»; };  // NOLINT
04803     template<> struct ConwayPolynomial<157, 2> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<152>, ZPZV<5»; };  // NOLINT
04804     template<> struct ConwayPolynomial<157, 3> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<152»; };  // NOLINT
04805     template<> struct ConwayPolynomial<157, 4> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<136>, ZPZV<5»; };  // NOLINT
04806     template<> struct ConwayPolynomial<157, 5> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<152»; };  // NOLINT
04807     template<> struct ConwayPolynomial<157, 6> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<130>, ZPZV<43>, ZPZV<144>, ZPZV<5»; };  // NOLINT
04808     template<> struct ConwayPolynomial<157, 7> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<152»; };  // NOLINT
04809     template<> struct ConwayPolynomial<157, 8> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<97>, ZPZV<40>, ZPZV<153>, ZPZV<5»; };  //
      NOLINT
04810     template<> struct ConwayPolynomial<157, 9> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<114>, ZPZV<52>, ZPZV<152»;
      };  // NOLINT
04811     template<> struct ConwayPolynomial<157, 10> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<61>, ZPZV<22>, ZPZV<124>, ZPZV<61>, ZPZV<93>,
      ZPZV<5»; };  // NOLINT
04812     template<> struct ConwayPolynomial<157, 11> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<29>, ZPZV<152»; };  // NOLINT
04813     template<> struct ConwayPolynomial<157, 12> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<77>, ZPZV<110>, ZPZV<72>, ZPZV<137>, ZPZV<43>,
      ZPZV<152>, ZPZV<57>, ZPZV<5»; };  // NOLINT
04814     template<> struct ConwayPolynomial<157, 13> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<0>, ZPZV<156>, ZPZV<9>, ZPZV<152»; };  // NOLINT
04815     template<> struct ConwayPolynomial<157, 17> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<152»; };  // NOLINT
04816     template<> struct ConwayPolynomial<157, 19> { using ZPZ = aerobus::zpz<157>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<152»; };  //
      NOLINT
04817     template<> struct ConwayPolynomial<163, 1> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<161»; };  // NOLINT
04818     template<> struct ConwayPolynomial<163, 2> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<159>, ZPZV<2»; };  // NOLINT
04819     template<> struct ConwayPolynomial<163, 3> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<161»; };  // NOLINT
04820     template<> struct ConwayPolynomial<163, 4> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<91>, ZPZV<2»; };  // NOLINT
04821     template<> struct ConwayPolynomial<163, 5> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<161»; };  // NOLINT
04822     template<> struct ConwayPolynomial<163, 6> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<83>, ZPZV<25>, ZPZV<156>, ZPZV<2»; };  // NOLINT
04823     template<> struct ConwayPolynomial<163, 7> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<161»; };  // NOLINT
04824     template<> struct ConwayPolynomial<163, 8> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<132>, ZPZV<83>, ZPZV<6>, ZPZV<2»; };  //
      NOLINT
04825     template<> struct ConwayPolynomial<163, 9> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<162>, ZPZV<127>, ZPZV<161»;
      };  // NOLINT
04826     template<> struct ConwayPolynomial<163, 10> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<111>, ZPZV<120>, ZPZV<125>, ZPZV<15>, ZPZV<0>,
      ZPZV<2»; };  // NOLINT
04827     template<> struct ConwayPolynomial<163, 11> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<11>, ZPZV<161»; };  // NOLINT
04828     template<> struct ConwayPolynomial<163, 12> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<39>, ZPZV<112>, ZPZV<31>, ZPZV<38>, ZPZV<103>,
      ZPZV<10>, ZPZV<69>, ZPZV<2»; };  // NOLINT
04829     template<> struct ConwayPolynomial<163, 13> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<161»; };  // NOLINT
04830     template<> struct ConwayPolynomial<163, 17> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<71>, ZPZV<161»; };  // NOLINT
04831     template<> struct ConwayPolynomial<163, 19> { using ZPZ = aerobus::zpz<163>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<161»; };  //
      NOLINT
04832     template<> struct ConwayPolynomial<167, 1> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<162»; };  // NOLINT
04833     template<> struct ConwayPolynomial<167, 2> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<166>, ZPZV<5»; };  // NOLINT
04834     template<> struct ConwayPolynomial<167, 3> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<162»; };  // NOLINT
04835     template<> struct ConwayPolynomial<167, 4> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<120>, ZPZV<5»; };  // NOLINT
04836     template<> struct ConwayPolynomial<167, 5> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<162»; };  // NOLINT
04837     template<> struct ConwayPolynomial<167, 6> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<75>, ZPZV<38>, ZPZV<2>, ZPZV<5»; };  // NOLINT
04838     template<> struct ConwayPolynomial<167, 7> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<162»; };  // NOLINT
04839     template<> struct ConwayPolynomial<167, 8> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<149>, ZPZV<56>, ZPZV<113>, ZPZV<5»; };  //
      NOLINT
04840     template<> struct ConwayPolynomial<167, 9> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<165>, ZPZV<122>, ZPZV<162»;
      };  // NOLINT
04841     template<> struct ConwayPolynomial<167, 10> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<85>, ZPZV<68>, ZPZV<109>, ZPZV<143>,
      ZPZV<148>, ZPZV<5»; };  // NOLINT
04842     template<> struct ConwayPolynomial<167, 11> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<24>, ZPZV<162»; };  // NOLINT
04843     template<> struct ConwayPolynomial<167, 12> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<142>, ZPZV<10>, ZPZV<142>, ZPZV<131>,
      ZPZV<140>, ZPZV<41>, ZPZV<57>, ZPZV<5»; };  // NOLINT
04844     template<> struct ConwayPolynomial<167, 13> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<162»; };  // NOLINT
04845     template<> struct ConwayPolynomial<167, 17> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<32>, ZPZV<162»; };  // NOLINT
04846     template<> struct ConwayPolynomial<167, 19> { using ZPZ = aerobus::zpz<167>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<162»; };  //
      NOLINT
04847     template<> struct ConwayPolynomial<173, 1> { using ZPZ = aerobus::zpz<173>; using type =
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      POLYV<ZPZV<1>, ZPZV<171»; };  // NOLINT
04848     template<> struct ConwayPolynomial<173, 2> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<169>, ZPZV<2»; };  // NOLINT
04849     template<> struct ConwayPolynomial<173, 3> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<171»; };  // NOLINT
04850     template<> struct ConwayPolynomial<173, 4> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<102>, ZPZV<2»; };  // NOLINT
04851     template<> struct ConwayPolynomial<173, 5> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<171»; };  // NOLINT
04852     template<> struct ConwayPolynomial<173, 6> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<27>, ZPZV<134>, ZPZV<107>, ZPZV<2»; };  // NOLINT
04853     template<> struct ConwayPolynomial<173, 7> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<171»; };  // NOLINT
04854     template<> struct ConwayPolynomial<173, 8> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<125>, ZPZV<158>, ZPZV<27>, ZPZV<2»; };  //
      NOLINT
04855     template<> struct ConwayPolynomial<173, 9> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<56>, ZPZV<104>, ZPZV<171»;
      };  // NOLINT
04856     template<> struct ConwayPolynomial<173, 10> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<156>, ZPZV<164>, ZPZV<48>, ZPZV<106>,
      ZPZV<58>, ZPZV<2»; };  // NOLINT
04857     template<> struct ConwayPolynomial<173, 11> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<12>, ZPZV<171»; };  // NOLINT
04858     template<> struct ConwayPolynomial<173, 12> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<29>, ZPZV<64>, ZPZV<46>, ZPZV<166>, ZPZV<0>,
      ZPZV<159>, ZPZV<22>, ZPZV<2»; };  // NOLINT
04859     template<> struct ConwayPolynomial<173, 13> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<171»; };  // NOLINT
04860     template<> struct ConwayPolynomial<173, 17> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<171»; };  // NOLINT
04861     template<> struct ConwayPolynomial<173, 19> { using ZPZ = aerobus::zpz<173>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<171»; };  //
      NOLINT
04862     template<> struct ConwayPolynomial<179, 1> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<177»; };  // NOLINT
04863     template<> struct ConwayPolynomial<179, 2> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<172>, ZPZV<2»; };  // NOLINT
04864     template<> struct ConwayPolynomial<179, 3> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<177»; };  // NOLINT
04865     template<> struct ConwayPolynomial<179, 4> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<109>, ZPZV<2»; };  // NOLINT
04866     template<> struct ConwayPolynomial<179, 5> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<177»; };  // NOLINT
04867     template<> struct ConwayPolynomial<179, 6> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<91>, ZPZV<55>, ZPZV<109>, ZPZV<2»; };  // NOLINT
04868     template<> struct ConwayPolynomial<179, 7> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<177»; };  // NOLINT
04869     template<> struct ConwayPolynomial<179, 8> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<163>, ZPZV<144>, ZPZV<73>, ZPZV<2»; };  //
      NOLINT
04870     template<> struct ConwayPolynomial<179, 9> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<40>, ZPZV<64>, ZPZV<177»; };
      // NOLINT
04871     template<> struct ConwayPolynomial<179, 10> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<115>, ZPZV<71>, ZPZV<150>, ZPZV<49>, ZPZV<87>,
      ZPZV<2»; };  // NOLINT
04872     template<> struct ConwayPolynomial<179, 11> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<28>, ZPZV<177»; };  // NOLINT
04873     template<> struct ConwayPolynomial<179, 12> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<103>, ZPZV<83>, ZPZV<43>, ZPZV<76>, ZPZV<8>,
      ZPZV<177>, ZPZV<1>, ZPZV<2»; };  // NOLINT
04874     template<> struct ConwayPolynomial<179, 13> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<177»; };  // NOLINT
04875     template<> struct ConwayPolynomial<179, 17> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<177»; };  // NOLINT
04876     template<> struct ConwayPolynomial<179, 19> { using ZPZ = aerobus::zpz<179>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<177»; };  //
      NOLINT
04877     template<> struct ConwayPolynomial<181, 1> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<179»; };  // NOLINT
04878     template<> struct ConwayPolynomial<181, 2> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<177>, ZPZV<2»; };  // NOLINT
04879     template<> struct ConwayPolynomial<181, 3> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<179»; };  // NOLINT
04880     template<> struct ConwayPolynomial<181, 4> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<105>, ZPZV<2»; };  // NOLINT
04881     template<> struct ConwayPolynomial<181, 5> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<21>, ZPZV<179»; };  // NOLINT
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04882     template<> struct ConwayPolynomial<181, 6> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<177>, ZPZV<163>, ZPZV<169>, ZPZV<2>>; };  // NOLINT
04883     template<> struct ConwayPolynomial<181, 7> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<179>>; };  // NOLINT
04884     template<> struct ConwayPolynomial<181, 8> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<108>, ZPZV<22>, ZPZV<149>, ZPZV<2>>; };  //
      NOLINT
04885     template<> struct ConwayPolynomial<181, 9> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<107>, ZPZV<168>, ZPZV<179>>;
      };  // NOLINT
04886     template<> struct ConwayPolynomial<181, 10> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<154>, ZPZV<104>, ZPZV<94>, ZPZV<57>, ZPZV<88>,
      ZPZV<2>>; };  // NOLINT
04887     template<> struct ConwayPolynomial<181, 11> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<24>, ZPZV<179>>; };  // NOLINT
04888     template<> struct ConwayPolynomial<181, 12> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<171>, ZPZV<141>, ZPZV<45>, ZPZV<122>,
      ZPZV<175>, ZPZV<12>, ZPZV<10>, ZPZV<2>>; };  // NOLINT
04889     template<> struct ConwayPolynomial<181, 13> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<179>>; };  // NOLINT
04890     template<> struct ConwayPolynomial<181, 17> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<179>>; };  // NOLINT
04891     template<> struct ConwayPolynomial<181, 19> { using ZPZ = aerobus::zpz<181>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<36>, ZPZV<179>>; };  //
      NOLINT
04892     template<> struct ConwayPolynomial<191, 1> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<172>>; };  // NOLINT
04893     template<> struct ConwayPolynomial<191, 2> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<190>, ZPZV<19>>; };  // NOLINT
04894     template<> struct ConwayPolynomial<191, 3> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<172>>; };  // NOLINT
04895     template<> struct ConwayPolynomial<191, 4> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<100>, ZPZV<19>>; };  // NOLINT
04896     template<> struct ConwayPolynomial<191, 5> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<172>>; };  // NOLINT
04897     template<> struct ConwayPolynomial<191, 6> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<110>, ZPZV<10>, ZPZV<10>, ZPZV<19>>; };  // NOLINT
04898     template<> struct ConwayPolynomial<191, 7> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<172>>; };  // NOLINT
04899     template<> struct ConwayPolynomial<191, 8> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<164>, ZPZV<139>, ZPZV<171>, ZPZV<19>>; };  //
      NOLINT
04900     template<> struct ConwayPolynomial<191, 9> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<62>, ZPZV<124>, ZPZV<172>>;
      };  // NOLINT
04901     template<> struct ConwayPolynomial<191, 10> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<113>, ZPZV<47>, ZPZV<173>, ZPZV<74>,
      ZPZV<156>, ZPZV<19>>; };  // NOLINT
04902     template<> struct ConwayPolynomial<191, 11> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<6>, ZPZV<172>>; };  // NOLINT
04903     template<> struct ConwayPolynomial<191, 12> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<79>, ZPZV<168>, ZPZV<25>, ZPZV<49>, ZPZV<90>,
      ZPZV<7>, ZPZV<151>, ZPZV<19>>; };  // NOLINT
04904     template<> struct ConwayPolynomial<191, 13> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<172>>; };  // NOLINT
04905     template<> struct ConwayPolynomial<191, 17> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<172>>; };  // NOLINT
04906     template<> struct ConwayPolynomial<191, 19> { using ZPZ = aerobus::zpz<191>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<190>, ZPZV<2>, ZPZV<172>>; };  //
      NOLINT
04907     template<> struct ConwayPolynomial<193, 1> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<188>>; };  // NOLINT
04908     template<> struct ConwayPolynomial<193, 2> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<192>, ZPZV<5>>; };  // NOLINT
04909     template<> struct ConwayPolynomial<193, 3> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<188>>; };  // NOLINT
04910     template<> struct ConwayPolynomial<193, 4> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<148>, ZPZV<5>>; };  // NOLINT
04911     template<> struct ConwayPolynomial<193, 5> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<188>>; };  // NOLINT
04912     template<> struct ConwayPolynomial<193, 6> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<149>, ZPZV<8>, ZPZV<172>, ZPZV<5>>; };  // NOLINT
04913     template<> struct ConwayPolynomial<193, 7> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<188>>; };  // NOLINT
04914     template<> struct ConwayPolynomial<193, 8> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<145>, ZPZV<34>, ZPZV<154>, ZPZV<5>>; };  //
      NOLINT
04915     template<> struct ConwayPolynomial<193, 9> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<168>, ZPZV<27>, ZPZV<188>>;
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      };  // NOLINT
04916     template<> struct ConwayPolynomial<193, 10> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<20>, ZPZV<51>, ZPZV<77>, ZPZV<0>, ZPZV<89>,
      ZPZV<5>>; };  // NOLINT
04917     template<> struct ConwayPolynomial<193, 11> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<1>, ZPZV<188>>; };  // NOLINT
04918     template<> struct ConwayPolynomial<193, 12> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<155>, ZPZV<52>, ZPZV<135>, ZPZV<152>,
      ZPZV<90>, ZPZV<46>, ZPZV<28>, ZPZV<5>>; };  // NOLINT
04919     template<> struct ConwayPolynomial<193, 13> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<39>, ZPZV<188>>; };  // NOLINT
04920     template<> struct ConwayPolynomial<193, 17> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<188>>; };  // NOLINT
04921     template<> struct ConwayPolynomial<193, 19> { using ZPZ = aerobus::zpz<193>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<188>>; };  //
      NOLINT
04922     template<> struct ConwayPolynomial<197, 1> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<195>>; };  // NOLINT
04923     template<> struct ConwayPolynomial<197, 2> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<192>, ZPZV<2>>; };  // NOLINT
04924     template<> struct ConwayPolynomial<197, 3> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<195>>; };  // NOLINT
04925     template<> struct ConwayPolynomial<197, 4> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<16>, ZPZV<124>, ZPZV<2>>; };  // NOLINT
04926     template<> struct ConwayPolynomial<197, 5> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<195>>; };  // NOLINT
04927     template<> struct ConwayPolynomial<197, 6> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<124>, ZPZV<79>, ZPZV<173>, ZPZV<2>>; };  // NOLINT
04928     template<> struct ConwayPolynomial<197, 7> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<195>>; };  // NOLINT
04929     template<> struct ConwayPolynomial<197, 8> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<176>, ZPZV<96>, ZPZV<29>, ZPZV<2>>; };  //
      NOLINT
04930     template<> struct ConwayPolynomial<197, 9> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<127>, ZPZV<8>, ZPZV<195>>;
      };  // NOLINT
04931     template<> struct ConwayPolynomial<197, 10> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<121>, ZPZV<137>, ZPZV<8>, ZPZV<73>, ZPZV<42>,
      ZPZV<2>>; };  // NOLINT
04932     template<> struct ConwayPolynomial<197, 11> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<14>, ZPZV<195>>; };  // NOLINT
04933     template<> struct ConwayPolynomial<197, 12> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<168>, ZPZV<15>, ZPZV<130>, ZPZV<141>, ZPZV<9>,
      ZPZV<90>, ZPZV<163>, ZPZV<2>>; };  // NOLINT
04934     template<> struct ConwayPolynomial<197, 13> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<39>, ZPZV<195>>; };  // NOLINT
04935     template<> struct ConwayPolynomial<197, 17> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<35>, ZPZV<195>>; };  // NOLINT
04936     template<> struct ConwayPolynomial<197, 19> { using ZPZ = aerobus::zpz<197>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<195>>; };  //
      NOLINT
04937     template<> struct ConwayPolynomial<199, 1> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<196>>; };  // NOLINT
04938     template<> struct ConwayPolynomial<199, 2> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<193>, ZPZV<3>>; };  // NOLINT
04939     template<> struct ConwayPolynomial<199, 3> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<196>>; };  // NOLINT
04940     template<> struct ConwayPolynomial<199, 4> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<162>, ZPZV<3>>; };  // NOLINT
04941     template<> struct ConwayPolynomial<199, 5> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<196>>; };  // NOLINT
04942     template<> struct ConwayPolynomial<199, 6> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<90>, ZPZV<58>, ZPZV<79>, ZPZV<3>>; };  // NOLINT
04943     template<> struct ConwayPolynomial<199, 7> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<196>>; };  // NOLINT
04944     template<> struct ConwayPolynomial<199, 8> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<160>, ZPZV<23>, ZPZV<159>, ZPZV<3>>; };  //
      NOLINT
04945     template<> struct ConwayPolynomial<199, 9> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<177>, ZPZV<141>, ZPZV<196>>;
      };  // NOLINT
04946     template<> struct ConwayPolynomial<199, 10> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<171>, ZPZV<158>, ZPZV<31>, ZPZV<54>, ZPZV<9>,
      ZPZV<3>>; };  // NOLINT
04947     template<> struct ConwayPolynomial<199, 11> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<1>, ZPZV<196>>; };  // NOLINT
04948     template<> struct ConwayPolynomial<199, 12> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<33>, ZPZV<192>, ZPZV<197>, ZPZV<138>,
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      ZPZV<69>, ZPZV<57>, ZPZV<151>, ZPZV<3»; };  // NOLINT
04949     template<> struct ConwayPolynomial<199, 13> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<196»; };  // NOLINT
04950     template<> struct ConwayPolynomial<199, 17> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<196»; };  // NOLINT
04951     template<> struct ConwayPolynomial<199, 19> { using ZPZ = aerobus::zpz<199>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<196»; };  //
      NOLINT
04952     template<> struct ConwayPolynomial<211, 1> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<209»; };  // NOLINT
04953     template<> struct ConwayPolynomial<211, 2> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<207>, ZPZV<2»; };  // NOLINT
04954     template<> struct ConwayPolynomial<211, 3> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<209»; };  // NOLINT
04955     template<> struct ConwayPolynomial<211, 4> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<161>, ZPZV<2»; };  // NOLINT
04956     template<> struct ConwayPolynomial<211, 5> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<209»; };  // NOLINT
04957     template<> struct ConwayPolynomial<211, 6> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<81>, ZPZV<194>, ZPZV<133>, ZPZV<2»; };  // NOLINT
04958     template<> struct ConwayPolynomial<211, 7> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<209»; };  // NOLINT
04959     template<> struct ConwayPolynomial<211, 8> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<200>, ZPZV<87>, ZPZV<29>, ZPZV<2»; };  //
      NOLINT
04960     template<> struct ConwayPolynomial<211, 9> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<139>, ZPZV<26>, ZPZV<209»;
      };  // NOLINT
04961     template<> struct ConwayPolynomial<211, 10> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<30>, ZPZV<61>, ZPZV<148>, ZPZV<87>, ZPZV<125>,
      ZPZV<2»; };  // NOLINT
04962     template<> struct ConwayPolynomial<211, 11> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<7>, ZPZV<209»; };  // NOLINT
04963     template<> struct ConwayPolynomial<211, 12> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<50>, ZPZV<145>, ZPZV<126>, ZPZV<184>,
      ZPZV<84>, ZPZV<27>, ZPZV<2»; };  // NOLINT
04964     template<> struct ConwayPolynomial<211, 13> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<209»; };  // NOLINT
04965     template<> struct ConwayPolynomial<211, 17> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<209»; };  // NOLINT
04966     template<> struct ConwayPolynomial<211, 19> { using ZPZ = aerobus::zpz<211>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<209»; };  //
      NOLINT
04967     template<> struct ConwayPolynomial<223, 1> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<220»; };  // NOLINT
04968     template<> struct ConwayPolynomial<223, 2> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<221>, ZPZV<3»; };  // NOLINT
04969     template<> struct ConwayPolynomial<223, 3> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<220»; };  // NOLINT
04970     template<> struct ConwayPolynomial<223, 4> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<163>, ZPZV<3»; };  // NOLINT
04971     template<> struct ConwayPolynomial<223, 5> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<220»; };  // NOLINT
04972     template<> struct ConwayPolynomial<223, 6> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<68>, ZPZV<24>, ZPZV<196>, ZPZV<3»; };  // NOLINT
04973     template<> struct ConwayPolynomial<223, 7> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<220»; };  // NOLINT
04974     template<> struct ConwayPolynomial<223, 8> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<139>, ZPZV<98>, ZPZV<138>, ZPZV<3»; };  //
      NOLINT
04975     template<> struct ConwayPolynomial<223, 9> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<164>, ZPZV<64>, ZPZV<220»;
      };  // NOLINT
04976     template<> struct ConwayPolynomial<223, 10> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<118>, ZPZV<177>, ZPZV<87>, ZPZV<99>, ZPZV<62>,
      ZPZV<3»; };  // NOLINT
04977     template<> struct ConwayPolynomial<223, 11> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<8>, ZPZV<220»; };  // NOLINT
04978     template<> struct ConwayPolynomial<223, 12> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<64>, ZPZV<94>, ZPZV<11>, ZPZV<105>, ZPZV<64>,
      ZPZV<151>, ZPZV<213>, ZPZV<3»; };  // NOLINT
04979     template<> struct ConwayPolynomial<223, 13> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<23>, ZPZV<220»; };  // NOLINT
04980     template<> struct ConwayPolynomial<223, 17> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<220»; };  // NOLINT
04981     template<> struct ConwayPolynomial<223, 19> { using ZPZ = aerobus::zpz<223>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<220»; };  //
      NOLINT
04982     template<> struct ConwayPolynomial<227, 1> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<225»; };  // NOLINT
04983     template<> struct ConwayPolynomial<227, 2> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<220>, ZPZV<2»; };  // NOLINT
04984     template<> struct ConwayPolynomial<227, 3> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<225»; };  // NOLINT
04985     template<> struct ConwayPolynomial<227, 4> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<143>, ZPZV<2»; };  // NOLINT
04986     template<> struct ConwayPolynomial<227, 5> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<225»; };  // NOLINT
04987     template<> struct ConwayPolynomial<227, 6> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<174>, ZPZV<24>, ZPZV<135>, ZPZV<2»; };  // NOLINT
04988     template<> struct ConwayPolynomial<227, 7> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<225»; };  // NOLINT
04989     template<> struct ConwayPolynomial<227, 8> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<151>, ZPZV<176>, ZPZV<106>, ZPZV<2»; };  //
      NOLINT
04990     template<> struct ConwayPolynomial<227, 9> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<24>, ZPZV<183>, ZPZV<225»;
      };  // NOLINT
04991     template<> struct ConwayPolynomial<227, 10> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<22>, ZPZV<199>, ZPZV<12>, ZPZV<93>, ZPZV<77>,
      ZPZV<2»; };  // NOLINT
04992     template<> struct ConwayPolynomial<227, 11> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<2>, ZPZV<225»; };  // NOLINT
04993     template<> struct ConwayPolynomial<227, 12> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<123>, ZPZV<99>, ZPZV<160>, ZPZV<96>,
      ZPZV<127>, ZPZV<142>, ZPZV<94>, ZPZV<2»; };  // NOLINT
04994     template<> struct ConwayPolynomial<227, 13> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<225»; };  // NOLINT
04995     template<> struct ConwayPolynomial<227, 17> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<225»; };  // NOLINT
04996     template<> struct ConwayPolynomial<227, 19> { using ZPZ = aerobus::zpz<227>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<34>, ZPZV<225»; };  //
      NOLINT
04997     template<> struct ConwayPolynomial<229, 1> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<223»; };  // NOLINT
04998     template<> struct ConwayPolynomial<229, 2> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<228>, ZPZV<6»; };  // NOLINT
04999     template<> struct ConwayPolynomial<229, 3> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<223»; };  // NOLINT
05000     template<> struct ConwayPolynomial<229, 4> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<162>, ZPZV<6»; };  // NOLINT
05001     template<> struct ConwayPolynomial<229, 5> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<223»; };  // NOLINT
05002     template<> struct ConwayPolynomial<229, 6> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<160>, ZPZV<186>, ZPZV<6»; };  // NOLINT
05003     template<> struct ConwayPolynomial<229, 7> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<223»; };  // NOLINT
05004     template<> struct ConwayPolynomial<229, 8> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<193>, ZPZV<62>, ZPZV<205>, ZPZV<6»; };  //
      NOLINT
05005     template<> struct ConwayPolynomial<229, 9> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<117>, ZPZV<50>, ZPZV<223»;
      };  // NOLINT
05006     template<> struct ConwayPolynomial<229, 10> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<185>, ZPZV<135>, ZPZV<158>, ZPZV<167>,
      ZPZV<98>, ZPZV<6»; };  // NOLINT
05007     template<> struct ConwayPolynomial<229, 11> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<2>, ZPZV<223»; };  // NOLINT
05008     template<> struct ConwayPolynomial<229, 12> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<131>, ZPZV<140>, ZPZV<25>, ZPZV<6>, ZPZV<172>,
      ZPZV<9>, ZPZV<145>, ZPZV<6»; };  // NOLINT
05009     template<> struct ConwayPolynomial<229, 13> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<47>, ZPZV<223»; };  // NOLINT
05010     template<> struct ConwayPolynomial<229, 17> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<223»; };  // NOLINT
05011     template<> struct ConwayPolynomial<229, 19> { using ZPZ = aerobus::zpz<229>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<228>, ZPZV<15>, ZPZV<223»; };  //
      NOLINT
05012     template<> struct ConwayPolynomial<233, 1> { using ZPZ = aerobus::zpz<233>; using type =
      POLYV<ZPZV<1>, ZPZV<230»; };  // NOLINT
05013     template<> struct ConwayPolynomial<233, 2> { using ZPZ = aerobus::zpz<233>; using type =
      POLYV<ZPZV<1>, ZPZV<232>, ZPZV<3»; };  // NOLINT
05014     template<> struct ConwayPolynomial<233, 3> { using ZPZ = aerobus::zpz<233>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<230»; };  // NOLINT
05015     template<> struct ConwayPolynomial<233, 4> { using ZPZ = aerobus::zpz<233>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<158>, ZPZV<3»; };  // NOLINT
05016     template<> struct ConwayPolynomial<233, 5> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<230»; };  // NOLINT
05017     template<> struct ConwayPolynomial<233, 6> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<122>, ZPZV<215>, ZPZV<32>, ZPZV<3»; };  // NOLINT
05018     template<> struct ConwayPolynomial<233, 7> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<230»; };  // NOLINT
05019     template<> struct ConwayPolynomial<233, 8> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<202>, ZPZV<135>, ZPZV<181>, ZPZV<3»; };  //
    NOLINT
05020     template<> struct ConwayPolynomial<233, 9> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<56>, ZPZV<146>, ZPZV<230»;
    };  // NOLINT
05021     template<> struct ConwayPolynomial<233, 10> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<28>, ZPZV<71>, ZPZV<102>, ZPZV<3>, ZPZV<48>,
    ZPZV<3»; };  // NOLINT
05022     template<> struct ConwayPolynomial<233, 11> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<5>, ZPZV<230»; };  // NOLINT
05023     template<> struct ConwayPolynomial<233, 12> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<96>, ZPZV<21>, ZPZV<114>, ZPZV<31>, ZPZV<19>,
    ZPZV<216>, ZPZV<20>, ZPZV<3»; };  // NOLINT
05024     template<> struct ConwayPolynomial<233, 13> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<230»; };  // NOLINT
05025     template<> struct ConwayPolynomial<233, 17> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<230»; };  // NOLINT
05026     template<> struct ConwayPolynomial<233, 19> { using ZPZ = aerobus::zpz<233>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<25>, ZPZV<230»; };  //
    NOLINT
05027     template<> struct ConwayPolynomial<239, 1> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<232»; };  // NOLINT
05028     template<> struct ConwayPolynomial<239, 2> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<237>, ZPZV<7»; };  // NOLINT
05029     template<> struct ConwayPolynomial<239, 3> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<232»; };  // NOLINT
05030     template<> struct ConwayPolynomial<239, 4> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<132>, ZPZV<7»; };  // NOLINT
05031     template<> struct ConwayPolynomial<239, 5> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<232»; };  // NOLINT
05032     template<> struct ConwayPolynomial<239, 6> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<237>, ZPZV<60>, ZPZV<200>, ZPZV<7»; };  // NOLINT
05033     template<> struct ConwayPolynomial<239, 7> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<232»; };  // NOLINT
05034     template<> struct ConwayPolynomial<239, 8> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<201>, ZPZV<202>, ZPZV<54>, ZPZV<7»; };  //
    NOLINT
05035     template<> struct ConwayPolynomial<239, 9> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<2>, ZPZV<88>, ZPZV<232»; };
    // NOLINT
05036     template<> struct ConwayPolynomial<239, 10> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<57>, ZPZV<68>, ZPZV<226>, ZPZV<127>,
    ZPZV<108>, ZPZV<7»; };  // NOLINT
05037     template<> struct ConwayPolynomial<239, 11> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<8>, ZPZV<232»; };  // NOLINT
05038     template<> struct ConwayPolynomial<239, 12> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<235>, ZPZV<14>, ZPZV<113>, ZPZV<182>,
    ZPZV<101>, ZPZV<81>, ZPZV<216>, ZPZV<7»; };  // NOLINT
05039     template<> struct ConwayPolynomial<239, 13> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<232»; };  // NOLINT
05040     template<> struct ConwayPolynomial<239, 17> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<232»; };  // NOLINT
05041     template<> struct ConwayPolynomial<239, 19> { using ZPZ = aerobus::zpz<239>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<232»; };  //
    NOLINT
05042     template<> struct ConwayPolynomial<241, 1> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<234»; };  // NOLINT
05043     template<> struct ConwayPolynomial<241, 2> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<238>, ZPZV<7»; };  // NOLINT
05044     template<> struct ConwayPolynomial<241, 3> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<234»; };  // NOLINT
05045     template<> struct ConwayPolynomial<241, 4> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<14>, ZPZV<152>, ZPZV<7»; };  // NOLINT
05046     template<> struct ConwayPolynomial<241, 5> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<234»; };  // NOLINT
05047     template<> struct ConwayPolynomial<241, 6> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<83>, ZPZV<6>, ZPZV<5>, ZPZV<7»; };  // NOLINT
05048     template<> struct ConwayPolynomial<241, 7> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<234»; };  // NOLINT
05049     template<> struct ConwayPolynomial<241, 8> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<173>, ZPZV<212>, ZPZV<153>, ZPZV<7»; };  //
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    NOLINT
05050     template<> struct ConwayPolynomial<241, 9> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<236>, ZPZV<125>, ZPZV<234»;
    };  // NOLINT
05051     template<> struct ConwayPolynomial<241, 10> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<29>, ZPZV<27>, ZPZV<145>, ZPZV<208>, ZPZV<55>,
    ZPZV<7»; };  // NOLINT
05052     template<> struct ConwayPolynomial<241, 11> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<3>, ZPZV<234»; };  // NOLINT
05053     template<> struct ConwayPolynomial<241, 12> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<42>, ZPZV<10>, ZPZV<109>, ZPZV<168>, ZPZV<22>,
    ZPZV<197>, ZPZV<17>, ZPZV<7»; };  // NOLINT
05054     template<> struct ConwayPolynomial<241, 13> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<234»; };  // NOLINT
05055     template<> struct ConwayPolynomial<241, 17> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<234»; };  // NOLINT
05056     template<> struct ConwayPolynomial<241, 19> { using ZPZ = aerobus::zpz<241>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<234»; };  //
    NOLINT
05057     template<> struct ConwayPolynomial<251, 1> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<245»; };  // NOLINT
05058     template<> struct ConwayPolynomial<251, 2> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<242>, ZPZV<6»; };  // NOLINT
05059     template<> struct ConwayPolynomial<251, 3> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<245»; };  // NOLINT
05060     template<> struct ConwayPolynomial<251, 4> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<200>, ZPZV<6»; };  // NOLINT
05061     template<> struct ConwayPolynomial<251, 5> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<245»; };  // NOLINT
05062     template<> struct ConwayPolynomial<251, 6> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<247>, ZPZV<151>, ZPZV<179>, ZPZV<6»; };  // NOLINT
05063     template<> struct ConwayPolynomial<251, 7> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<245»; };  // NOLINT
05064     template<> struct ConwayPolynomial<251, 8> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<142>, ZPZV<215>, ZPZV<173>, ZPZV<6»; };  //
    NOLINT
05065     template<> struct ConwayPolynomial<251, 9> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<187>, ZPZV<106>, ZPZV<245»;
    };  // NOLINT
05066     template<> struct ConwayPolynomial<251, 10> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<138>, ZPZV<110>, ZPZV<45>, ZPZV<34>,
    ZPZV<149>, ZPZV<6»; };  // NOLINT
05067     template<> struct ConwayPolynomial<251, 11> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<26>, ZPZV<245»; };  // NOLINT
05068     template<> struct ConwayPolynomial<251, 12> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<192>, ZPZV<53>, ZPZV<20>, ZPZV<20>, ZPZV<15>,
    ZPZV<201>, ZPZV<232>, ZPZV<6»; };  // NOLINT
05069     template<> struct ConwayPolynomial<251, 13> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<245»; };  // NOLINT
05070     template<> struct ConwayPolynomial<251, 17> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<245»; };  // NOLINT
05071     template<> struct ConwayPolynomial<251, 19> { using ZPZ = aerobus::zpz<251>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
    ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<245»; };  //
    NOLINT
05072     template<> struct ConwayPolynomial<257, 1> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<254»; };  // NOLINT
05073     template<> struct ConwayPolynomial<257, 2> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<251>, ZPZV<3»; };  // NOLINT
05074     template<> struct ConwayPolynomial<257, 3> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<254»; };  // NOLINT
05075     template<> struct ConwayPolynomial<257, 4> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<16>, ZPZV<187>, ZPZV<3»; };  // NOLINT
05076     template<> struct ConwayPolynomial<257, 5> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<254»; };  // NOLINT
05077     template<> struct ConwayPolynomial<257, 6> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<62>, ZPZV<18>, ZPZV<138>, ZPZV<3»; };  // NOLINT
05078     template<> struct ConwayPolynomial<257, 7> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<31>, ZPZV<254»; };  // NOLINT
05079     template<> struct ConwayPolynomial<257, 8> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<179>, ZPZV<140>, ZPZV<162>, ZPZV<3»; };  //
    NOLINT
05080     template<> struct ConwayPolynomial<257, 9> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<201>, ZPZV<50>, ZPZV<254»;
    };  // NOLINT
05081     template<> struct ConwayPolynomial<257, 10> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<97>, ZPZV<12>, ZPZV<225>, ZPZV<180>, ZPZV<20>,
    ZPZV<3»; };  // NOLINT
05082     template<> struct ConwayPolynomial<257, 11> { using ZPZ = aerobus::zpz<257>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
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      ZPZV<40>, ZPZV<254»; };  // NOLINT
05083     template<> struct ConwayPolynomial<257, 12> { using ZPZ = aerobus::zpz<257>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<13>, ZPZV<225>, ZPZV<215>, ZPZV<173>,
      ZPZV<249>, ZPZV<148>, ZPZV<20>, ZPZV<3»; };  // NOLINT
05084     template<> struct ConwayPolynomial<257, 13> { using ZPZ = aerobus::zpz<257>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<254»; };  // NOLINT
05085     template<> struct ConwayPolynomial<257, 17> { using ZPZ = aerobus::zpz<257>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<254»; };  // NOLINT
05086     template<> struct ConwayPolynomial<257, 19> { using ZPZ = aerobus::zpz<257>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<254»; };  //
      NOLINT
05087     template<> struct ConwayPolynomial<263, 1> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<258»; };  // NOLINT
05088     template<> struct ConwayPolynomial<263, 2> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<261>, ZPZV<5»; };  // NOLINT
05089     template<> struct ConwayPolynomial<263, 3> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<14>, ZPZV<258»; };  // NOLINT
05090     template<> struct ConwayPolynomial<263, 4> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<171>, ZPZV<5»; };  // NOLINT
05091     template<> struct ConwayPolynomial<263, 5> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<258»; };  // NOLINT
05092     template<> struct ConwayPolynomial<263, 6> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<222>, ZPZV<250>, ZPZV<225>, ZPZV<5»; };  // NOLINT
05093     template<> struct ConwayPolynomial<263, 7> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<258»; };  // NOLINT
05094     template<> struct ConwayPolynomial<263, 8> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<227>, ZPZV<170>, ZPZV<7>, ZPZV<5»; };  //
      NOLINT
05095     template<> struct ConwayPolynomial<263, 9> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<261>, ZPZV<29>, ZPZV<258»;
      };  // NOLINT
05096     template<> struct ConwayPolynomial<263, 10> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<245>, ZPZV<231>, ZPZV<198>, ZPZV<145>,
      ZPZV<119>, ZPZV<5»; };  // NOLINT
05097     template<> struct ConwayPolynomial<263, 11> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<2>, ZPZV<258»; };  // NOLINT
05098     template<> struct ConwayPolynomial<263, 12> { using ZPZ = aerobus::zpz<263>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<172>, ZPZV<174>, ZPZV<162>, ZPZV<252>,
      ZPZV<47>, ZPZV<45>, ZPZV<180>, ZPZV<5»; };  // NOLINT
05099     template<> struct ConwayPolynomial<269, 1> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<267»; };  // NOLINT
05100     template<> struct ConwayPolynomial<269, 2> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<268>, ZPZV<2»; };  // NOLINT
05101     template<> struct ConwayPolynomial<269, 3> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<267»; };  // NOLINT
05102     template<> struct ConwayPolynomial<269, 4> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<262>, ZPZV<2»; };  // NOLINT
05103     template<> struct ConwayPolynomial<269, 5> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<267»; };  // NOLINT
05104     template<> struct ConwayPolynomial<269, 6> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<120>, ZPZV<101>, ZPZV<206>, ZPZV<2»; };  // NOLINT
05105     template<> struct ConwayPolynomial<269, 7> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<267»; };  // NOLINT
05106     template<> struct ConwayPolynomial<269, 8> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<220>, ZPZV<131>, ZPZV<232>, ZPZV<2»; };  //
      NOLINT
05107     template<> struct ConwayPolynomial<269, 9> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<214>, ZPZV<267>, ZPZV<267»;
      };  // NOLINT
05108     template<> struct ConwayPolynomial<269, 10> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<264>, ZPZV<243>, ZPZV<186>, ZPZV<61>,
      ZPZV<10>, ZPZV<2»; };  // NOLINT
05109     template<> struct ConwayPolynomial<269, 11> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<20>, ZPZV<267»; };  // NOLINT
05110     template<> struct ConwayPolynomial<269, 12> { using ZPZ = aerobus::zpz<269>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<126>, ZPZV<165>, ZPZV<63>, ZPZV<215>,
      ZPZV<132>, ZPZV<180>, ZPZV<150>, ZPZV<2»; };  // NOLINT
05111     template<> struct ConwayPolynomial<271, 1> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<265»; };  // NOLINT
05112     template<> struct ConwayPolynomial<271, 2> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<269>, ZPZV<6»; };  // NOLINT
05113     template<> struct ConwayPolynomial<271, 3> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<265»; };  // NOLINT
05114     template<> struct ConwayPolynomial<271, 4> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<205>, ZPZV<6»; };  // NOLINT
05115     template<> struct ConwayPolynomial<271, 5> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<265»; };  // NOLINT
05116     template<> struct ConwayPolynomial<271, 6> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<207>, ZPZV<207>, ZPZV<81>, ZPZV<6»; };  // NOLINT
05117     template<> struct ConwayPolynomial<271, 7> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<22>, ZPZV<265»; };  // NOLINT
05118     template<> struct ConwayPolynomial<271, 8> { using ZPZ = aerobus::zpz<271>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<199>, ZPZV<114>, ZPZV<69>, ZPZV<6>>; };  //
      NOLINT
05119     template<> struct ConwayPolynomial<271, 9> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<266>, ZPZV<186>, ZPZV<265>>;
      };  // NOLINT
05120     template<> struct ConwayPolynomial<271, 10> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<133>, ZPZV<10>, ZPZV<256>, ZPZV<74>,
      ZPZV<126>, ZPZV<6>>; };  // NOLINT
05121     template<> struct ConwayPolynomial<271, 11> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<10>, ZPZV<265>>; };  // NOLINT
05122     template<> struct ConwayPolynomial<271, 12> { using ZPZ = aerobus::zpz<271>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<162>, ZPZV<210>, ZPZV<116>, ZPZV<205>,
      ZPZV<237>, ZPZV<256>, ZPZV<130>, ZPZV<6>>; };  // NOLINT
05123     template<> struct ConwayPolynomial<277, 1> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<272>>; };  // NOLINT
05124     template<> struct ConwayPolynomial<277, 2> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<274>, ZPZV<5>>; };  // NOLINT
05125     template<> struct ConwayPolynomial<277, 3> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<272>>; };  // NOLINT
05126     template<> struct ConwayPolynomial<277, 4> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<222>, ZPZV<5>>; };  // NOLINT
05127     template<> struct ConwayPolynomial<277, 5> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<272>>; };  // NOLINT
05128     template<> struct ConwayPolynomial<277, 6> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<33>, ZPZV<9>, ZPZV<118>, ZPZV<5>>; };  // NOLINT
05129     template<> struct ConwayPolynomial<277, 7> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<272>>; };  // NOLINT
05130     template<> struct ConwayPolynomial<277, 8> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<187>, ZPZV<159>, ZPZV<176>, ZPZV<5>>; };  //
      NOLINT
05131     template<> struct ConwayPolynomial<277, 9> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<177>, ZPZV<110>, ZPZV<272>>;
      };  // NOLINT
05132     template<> struct ConwayPolynomial<277, 10> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<206>, ZPZV<253>, ZPZV<237>, ZPZV<241>,
      ZPZV<260>, ZPZV<5>>; };  // NOLINT
05133     template<> struct ConwayPolynomial<277, 11> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<5>, ZPZV<272>>; };  // NOLINT
05134     template<> struct ConwayPolynomial<277, 12> { using ZPZ = aerobus::zpz<277>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<183>, ZPZV<218>, ZPZV<240>, ZPZV<40>,
      ZPZV<180>, ZPZV<115>, ZPZV<202>, ZPZV<5>>; };  // NOLINT
05135     template<> struct ConwayPolynomial<281, 1> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<278>>; };  // NOLINT
05136     template<> struct ConwayPolynomial<281, 2> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<280>, ZPZV<3>>; };  // NOLINT
05137     template<> struct ConwayPolynomial<281, 3> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<278>>; };  // NOLINT
05138     template<> struct ConwayPolynomial<281, 4> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<176>, ZPZV<3>>; };  // NOLINT
05139     template<> struct ConwayPolynomial<281, 5> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<278>>; };  // NOLINT
05140     template<> struct ConwayPolynomial<281, 6> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<151>, ZPZV<13>, ZPZV<27>, ZPZV<3>>; };  // NOLINT
05141     template<> struct ConwayPolynomial<281, 7> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<278>>; };  // NOLINT
05142     template<> struct ConwayPolynomial<281, 8> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<195>, ZPZV<279>, ZPZV<140>, ZPZV<3>>; };  //
      NOLINT
05143     template<> struct ConwayPolynomial<281, 9> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<148>, ZPZV<70>, ZPZV<278>>;
      };  // NOLINT
05144     template<> struct ConwayPolynomial<281, 10> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<258>, ZPZV<145>, ZPZV<13>, ZPZV<138>,
      ZPZV<191>, ZPZV<3>>; };  // NOLINT
05145     template<> struct ConwayPolynomial<281, 11> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<36>, ZPZV<278>>; };  // NOLINT
05146     template<> struct ConwayPolynomial<281, 12> { using ZPZ = aerobus::zpz<281>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<202>, ZPZV<68>, ZPZV<103>, ZPZV<116>,
      ZPZV<58>, ZPZV<28>, ZPZV<191>, ZPZV<3>>; };  // NOLINT
05147     template<> struct ConwayPolynomial<283, 1> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<280>>; };  // NOLINT
05148     template<> struct ConwayPolynomial<283, 2> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<282>, ZPZV<3>>; };  // NOLINT
05149     template<> struct ConwayPolynomial<283, 3> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<280>>; };  // NOLINT
05150     template<> struct ConwayPolynomial<283, 4> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<238>, ZPZV<3>>; };  // NOLINT
05151     template<> struct ConwayPolynomial<283, 5> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<280>>; };  // NOLINT
05152     template<> struct ConwayPolynomial<283, 6> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<199>, ZPZV<68>, ZPZV<73>, ZPZV<3>>; };  // NOLINT
05153     template<> struct ConwayPolynomial<283, 7> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<280>>; };  // NOLINT
05154     template<> struct ConwayPolynomial<283, 8> { using ZPZ = aerobus::zpz<283>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<179>, ZPZV<32>, ZPZV<232>, ZPZV<3»; };  //
      NOLINT
05155     template<> struct ConwayPolynomial<283, 9> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<136>, ZPZV<65>, ZPZV<280»;
      };  // NOLINT
05156     template<> struct ConwayPolynomial<283, 10> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<271>, ZPZV<185>, ZPZV<68>, ZPZV<100>,
      ZPZV<219>, ZPZV<3»; };  // NOLINT
05157     template<> struct ConwayPolynomial<283, 11> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<4>, ZPZV<280»; };  // NOLINT
05158     template<> struct ConwayPolynomial<283, 12> { using ZPZ = aerobus::zpz<283>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<20>, ZPZV<8>, ZPZV<96>, ZPZV<229>, ZPZV<49>,
      ZPZV<14>, ZPZV<56>, ZPZV<3»; };  // NOLINT
05159     template<> struct ConwayPolynomial<293, 1> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<291»; };  // NOLINT
05160     template<> struct ConwayPolynomial<293, 2> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<292>, ZPZV<2»; };  // NOLINT
05161     template<> struct ConwayPolynomial<293, 3> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<291»; };  // NOLINT
05162     template<> struct ConwayPolynomial<293, 4> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<166>, ZPZV<2»; };  // NOLINT
05163     template<> struct ConwayPolynomial<293, 5> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<291»; };  // NOLINT
05164     template<> struct ConwayPolynomial<293, 6> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<128>, ZPZV<210>, ZPZV<260>, ZPZV<2»; };  // NOLINT
05165     template<> struct ConwayPolynomial<293, 7> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<291»; };  // NOLINT
05166     template<> struct ConwayPolynomial<293, 8> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<29>, ZPZV<175>, ZPZV<195>, ZPZV<239>, ZPZV<2»; };  //
      NOLINT
05167     template<> struct ConwayPolynomial<293, 9> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<208>, ZPZV<190>, ZPZV<291»;
      };  // NOLINT
05168     template<> struct ConwayPolynomial<293, 10> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<186>, ZPZV<28>, ZPZV<46>, ZPZV<184>, ZPZV<24>,
      ZPZV<2»; };  // NOLINT
05169     template<> struct ConwayPolynomial<293, 11> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>,
      ZPZV<3>, ZPZV<291»; };  // NOLINT
05170     template<> struct ConwayPolynomial<293, 12> { using ZPZ = aerobus::zpz<293>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<159>, ZPZV<210>, ZPZV<125>, ZPZV<212>,
      ZPZV<167>, ZPZV<144>, ZPZV<157>, ZPZV<2»; };  // NOLINT
05171     template<> struct ConwayPolynomial<307, 1> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<302»; };  // NOLINT
05172     template<> struct ConwayPolynomial<307, 2> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<306>, ZPZV<5»; };  // NOLINT
05173     template<> struct ConwayPolynomial<307, 3> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<302»; };  // NOLINT
05174     template<> struct ConwayPolynomial<307, 4> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<239>, ZPZV<5»; };  // NOLINT
05175     template<> struct ConwayPolynomial<307, 5> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<302»; };  // NOLINT
05176     template<> struct ConwayPolynomial<307, 6> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<213>, ZPZV<172>, ZPZV<61>, ZPZV<5»; };  // NOLINT
05177     template<> struct ConwayPolynomial<307, 7> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<302»; };  // NOLINT
05178     template<> struct ConwayPolynomial<307, 8> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<283>, ZPZV<232>, ZPZV<131>, ZPZV<5»; };  //
      NOLINT
05179     template<> struct ConwayPolynomial<307, 9> { using ZPZ = aerobus::zpz<307>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<165>, ZPZV<70>, ZPZV<302»;
      };  // NOLINT
05180     template<> struct ConwayPolynomial<311, 1> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<294»; };  // NOLINT
05181     template<> struct ConwayPolynomial<311, 2> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<310>, ZPZV<17»; };  // NOLINT
05182     template<> struct ConwayPolynomial<311, 3> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<294»; };  // NOLINT
05183     template<> struct ConwayPolynomial<311, 4> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<163>, ZPZV<17»; };  // NOLINT
05184     template<> struct ConwayPolynomial<311, 5> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<294»; };  // NOLINT
05185     template<> struct ConwayPolynomial<311, 6> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<27>, ZPZV<167>, ZPZV<152>, ZPZV<17»; };  // NOLINT
05186     template<> struct ConwayPolynomial<311, 7> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<294»; };  // NOLINT
05187     template<> struct ConwayPolynomial<311, 8> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<162>, ZPZV<118>, ZPZV<2>, ZPZV<17»; };  //
      NOLINT
05188     template<> struct ConwayPolynomial<311, 9> { using ZPZ = aerobus::zpz<311>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<287>, ZPZV<74>, ZPZV<294»;
      };  // NOLINT
05189     template<> struct ConwayPolynomial<313, 1> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<303»; };  // NOLINT
05190     template<> struct ConwayPolynomial<313, 2> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<310>, ZPZV<10»; };  // NOLINT
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05191     template<> struct ConwayPolynomial<313, 3> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<303>>; };  // NOLINT
05192     template<> struct ConwayPolynomial<313, 4> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<239>, ZPZV<10>>; };  // NOLINT
05193     template<> struct ConwayPolynomial<313, 5> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<303>>; };  // NOLINT
05194     template<> struct ConwayPolynomial<313, 6> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<196>, ZPZV<213>, ZPZV<253>, ZPZV<10>>; };  // NOLINT
05195     template<> struct ConwayPolynomial<313, 7> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<303>>; };  // NOLINT
05196     template<> struct ConwayPolynomial<313, 8> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<306>, ZPZV<99>, ZPZV<106>, ZPZV<10>>; };  //
      NOLINT
05197     template<> struct ConwayPolynomial<313, 9> { using ZPZ = aerobus::zpz<313>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<267>, ZPZV<300>, ZPZV<303>>;
      };  // NOLINT
05198     template<> struct ConwayPolynomial<317, 1> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<315>>; };  // NOLINT
05199     template<> struct ConwayPolynomial<317, 2> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<313>, ZPZV<2>>; };  // NOLINT
05200     template<> struct ConwayPolynomial<317, 3> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<315>>; };  // NOLINT
05201     template<> struct ConwayPolynomial<317, 4> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<178>, ZPZV<2>>; };  // NOLINT
05202     template<> struct ConwayPolynomial<317, 5> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<315>>; };  // NOLINT
05203     template<> struct ConwayPolynomial<317, 6> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<195>, ZPZV<156>, ZPZV<4>, ZPZV<2>>; };  // NOLINT
05204     template<> struct ConwayPolynomial<317, 7> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<315>>; };  // NOLINT
05205     template<> struct ConwayPolynomial<317, 8> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<207>, ZPZV<85>, ZPZV<31>, ZPZV<2>>; };  //
      NOLINT
05206     template<> struct ConwayPolynomial<317, 9> { using ZPZ = aerobus::zpz<317>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<284>, ZPZV<296>, ZPZV<315>>;
      };  // NOLINT
05207     template<> struct ConwayPolynomial<331, 1> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<328>>; };  // NOLINT
05208     template<> struct ConwayPolynomial<331, 2> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<326>, ZPZV<3>>; };  // NOLINT
05209     template<> struct ConwayPolynomial<331, 3> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<328>>; };  // NOLINT
05210     template<> struct ConwayPolynomial<331, 4> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<290>, ZPZV<3>>; };  // NOLINT
05211     template<> struct ConwayPolynomial<331, 5> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<328>>; };  // NOLINT
05212     template<> struct ConwayPolynomial<331, 6> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<283>, ZPZV<205>, ZPZV<159>, ZPZV<3>>; };  // NOLINT
05213     template<> struct ConwayPolynomial<331, 7> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<328>>; };  // NOLINT
05214     template<> struct ConwayPolynomial<331, 8> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<249>, ZPZV<308>, ZPZV<78>, ZPZV<3>>; };  //
      NOLINT
05215     template<> struct ConwayPolynomial<331, 9> { using ZPZ = aerobus::zpz<331>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<194>, ZPZV<210>, ZPZV<328>>;
      };  // NOLINT
05216     template<> struct ConwayPolynomial<337, 1> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<327>>; };  // NOLINT
05217     template<> struct ConwayPolynomial<337, 2> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<332>, ZPZV<10>>; };  // NOLINT
05218     template<> struct ConwayPolynomial<337, 3> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<327>>; };  // NOLINT
05219     template<> struct ConwayPolynomial<337, 4> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<25>, ZPZV<224>, ZPZV<10>>; };  // NOLINT
05220     template<> struct ConwayPolynomial<337, 5> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<327>>; };  // NOLINT
05221     template<> struct ConwayPolynomial<337, 6> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<216>, ZPZV<127>, ZPZV<109>, ZPZV<10>>; };  // NOLINT
05222     template<> struct ConwayPolynomial<337, 7> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<327>>; };  // NOLINT
05223     template<> struct ConwayPolynomial<337, 8> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<331>, ZPZV<246>, ZPZV<251>, ZPZV<10>>; };  //
      NOLINT
05224     template<> struct ConwayPolynomial<337, 9> { using ZPZ = aerobus::zpz<337>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<148>, ZPZV<98>, ZPZV<327>>;
      };  // NOLINT
05225     template<> struct ConwayPolynomial<347, 1> { using ZPZ = aerobus::zpz<347>; using type =
      POLYV<ZPZV<1>, ZPZV<345>>; };  // NOLINT
05226     template<> struct ConwayPolynomial<347, 2> { using ZPZ = aerobus::zpz<347>; using type =
      POLYV<ZPZV<1>, ZPZV<343>, ZPZV<2>>; };  // NOLINT
05227     template<> struct ConwayPolynomial<347, 3> { using ZPZ = aerobus::zpz<347>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<345>>; };  // NOLINT
05228     template<> struct ConwayPolynomial<347, 4> { using ZPZ = aerobus::zpz<347>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<13>, ZPZV<295>, ZPZV<2>>; };  // NOLINT
05229     template<> struct ConwayPolynomial<347, 5> { using ZPZ = aerobus::zpz<347>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<345>>; };  // NOLINT
05230     template<> struct ConwayPolynomial<347, 6> { using ZPZ = aerobus::zpz<347>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<343>, ZPZV<26>, ZPZV<56>, ZPZV<2»; };  // NOLINT
05231     template<> struct ConwayPolynomial<347, 7> { using ZPZ = aerobus::zpz<347>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<345»; };  // NOLINT
05232     template<> struct ConwayPolynomial<347, 8> { using ZPZ = aerobus::zpz<347>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<187>, ZPZV<213>, ZPZV<117>, ZPZV<2»; };  //
    NOLINT
05233     template<> struct ConwayPolynomial<347, 9> { using ZPZ = aerobus::zpz<347>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<235>, ZPZV<252>, ZPZV<345»;
    };  // NOLINT
05234     template<> struct ConwayPolynomial<349, 1> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<347»; };  // NOLINT
05235     template<> struct ConwayPolynomial<349, 2> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<348>, ZPZV<2»; };  // NOLINT
05236     template<> struct ConwayPolynomial<349, 3> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<347»; };  // NOLINT
05237     template<> struct ConwayPolynomial<349, 4> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<279>, ZPZV<2»; };  // NOLINT
05238     template<> struct ConwayPolynomial<349, 5> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<347»; };  // NOLINT
05239     template<> struct ConwayPolynomial<349, 6> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<135>, ZPZV<177>, ZPZV<316>, ZPZV<2»; };  // NOLINT
05240     template<> struct ConwayPolynomial<349, 7> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<347»; };  // NOLINT
05241     template<> struct ConwayPolynomial<349, 8> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<308>, ZPZV<328>, ZPZV<268>, ZPZV<2»; };  //
    NOLINT
05242     template<> struct ConwayPolynomial<349, 9> { using ZPZ = aerobus::zpz<349>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<36>, ZPZV<290>, ZPZV<130>, ZPZV<347»;
    };  // NOLINT
05243     template<> struct ConwayPolynomial<353, 1> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<350»; };  // NOLINT
05244     template<> struct ConwayPolynomial<353, 2> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<348>, ZPZV<3»; };  // NOLINT
05245     template<> struct ConwayPolynomial<353, 3> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<350»; };  // NOLINT
05246     template<> struct ConwayPolynomial<353, 4> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<199>, ZPZV<3»; };  // NOLINT
05247     template<> struct ConwayPolynomial<353, 5> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<350»; };  // NOLINT
05248     template<> struct ConwayPolynomial<353, 6> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<215>, ZPZV<226>, ZPZV<295>, ZPZV<3»; };  // NOLINT
05249     template<> struct ConwayPolynomial<353, 7> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<350»; };  // NOLINT
05250     template<> struct ConwayPolynomial<353, 8> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<182>, ZPZV<26>, ZPZV<37>, ZPZV<3»; };  //
    NOLINT
05251     template<> struct ConwayPolynomial<353, 9> { using ZPZ = aerobus::zpz<353>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<319>, ZPZV<49>, ZPZV<350»;
    };  // NOLINT
05252     template<> struct ConwayPolynomial<359, 1> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<352»; };  // NOLINT
05253     template<> struct ConwayPolynomial<359, 2> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<358>, ZPZV<7»; };  // NOLINT
05254     template<> struct ConwayPolynomial<359, 3> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<352»; };  // NOLINT
05255     template<> struct ConwayPolynomial<359, 4> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<229>, ZPZV<7»; };  // NOLINT
05256     template<> struct ConwayPolynomial<359, 5> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<352»; };  // NOLINT
05257     template<> struct ConwayPolynomial<359, 6> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<309>, ZPZV<327>, ZPZV<327>, ZPZV<7»; };  // NOLINT
05258     template<> struct ConwayPolynomial<359, 7> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<352»; };  // NOLINT
05259     template<> struct ConwayPolynomial<359, 8> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<301>, ZPZV<143>, ZPZV<271>, ZPZV<7»; };  //
    NOLINT
05260     template<> struct ConwayPolynomial<359, 9> { using ZPZ = aerobus::zpz<359>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<356>, ZPZV<165>, ZPZV<352»;
    };  // NOLINT
05261     template<> struct ConwayPolynomial<367, 1> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<361»; };  // NOLINT
05262     template<> struct ConwayPolynomial<367, 2> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<366>, ZPZV<6»; };  // NOLINT
05263     template<> struct ConwayPolynomial<367, 3> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<10>, ZPZV<361»; };  // NOLINT
05264     template<> struct ConwayPolynomial<367, 4> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<295>, ZPZV<6»; };  // NOLINT
05265     template<> struct ConwayPolynomial<367, 5> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<361»; };  // NOLINT
05266     template<> struct ConwayPolynomial<367, 6> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<222>, ZPZV<321>, ZPZV<324>, ZPZV<6»; };  // NOLINT
05267     template<> struct ConwayPolynomial<367, 7> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<361»; };  // NOLINT
05268     template<> struct ConwayPolynomial<367, 8> { using ZPZ = aerobus::zpz<367>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<335>, ZPZV<282>, ZPZV<50>, ZPZV<6»; };  //
    NOLINT
05269     template<> struct ConwayPolynomial<367, 9> { using ZPZ = aerobus::zpz<367>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<213>, ZPZV<268>, ZPZV<361»;
      };  // NOLINT
05270     template<> struct ConwayPolynomial<373, 1> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<371»; };  // NOLINT
05271     template<> struct ConwayPolynomial<373, 2> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<369>, ZPZV<2»; };  // NOLINT
05272     template<> struct ConwayPolynomial<373, 3> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<371»; };  // NOLINT
05273     template<> struct ConwayPolynomial<373, 4> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<15>, ZPZV<304>, ZPZV<2»; };  // NOLINT
05274     template<> struct ConwayPolynomial<373, 5> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<371»; };  // NOLINT
05275     template<> struct ConwayPolynomial<373, 6> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<126>, ZPZV<83>, ZPZV<108>, ZPZV<2»; };  // NOLINT
05276     template<> struct ConwayPolynomial<373, 7> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<371»; };  // NOLINT
05277     template<> struct ConwayPolynomial<373, 8> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<203>, ZPZV<219>, ZPZV<66>, ZPZV<2»; };  //
      NOLINT
05278     template<> struct ConwayPolynomial<373, 9> { using ZPZ = aerobus::zpz<373>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<238>, ZPZV<370>, ZPZV<371»;
      };  // NOLINT
05279     template<> struct ConwayPolynomial<379, 1> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<377»; };  // NOLINT
05280     template<> struct ConwayPolynomial<379, 2> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<374>, ZPZV<2»; };  // NOLINT
05281     template<> struct ConwayPolynomial<379, 3> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<377»; };  // NOLINT
05282     template<> struct ConwayPolynomial<379, 4> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<327>, ZPZV<2»; };  // NOLINT
05283     template<> struct ConwayPolynomial<379, 5> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<377»; };  // NOLINT
05284     template<> struct ConwayPolynomial<379, 6> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<374>, ZPZV<364>, ZPZV<246>, ZPZV<2»; };  // NOLINT
05285     template<> struct ConwayPolynomial<379, 7> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<377»; };  // NOLINT
05286     template<> struct ConwayPolynomial<379, 8> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<210>, ZPZV<194>, ZPZV<173>, ZPZV<2»; };  //
      NOLINT
05287     template<> struct ConwayPolynomial<379, 9> { using ZPZ = aerobus::zpz<379>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<362>, ZPZV<369>, ZPZV<377»;
      };  // NOLINT
05288     template<> struct ConwayPolynomial<383, 1> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<378»; };  // NOLINT
05289     template<> struct ConwayPolynomial<383, 2> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<382>, ZPZV<5»; };  // NOLINT
05290     template<> struct ConwayPolynomial<383, 3> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<378»; };  // NOLINT
05291     template<> struct ConwayPolynomial<383, 4> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<309>, ZPZV<5»; };  // NOLINT
05292     template<> struct ConwayPolynomial<383, 5> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<378»; };  // NOLINT
05293     template<> struct ConwayPolynomial<383, 6> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<69>, ZPZV<8>, ZPZV<158>, ZPZV<5»; };  // NOLINT
05294     template<> struct ConwayPolynomial<383, 7> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<378»; };  // NOLINT
05295     template<> struct ConwayPolynomial<383, 8> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<281>, ZPZV<332>, ZPZV<296>, ZPZV<5»; };  //
      NOLINT
05296     template<> struct ConwayPolynomial<383, 9> { using ZPZ = aerobus::zpz<383>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<137>, ZPZV<76>, ZPZV<378»;
      };  // NOLINT
05297     template<> struct ConwayPolynomial<389, 1> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<387»; };  // NOLINT
05298     template<> struct ConwayPolynomial<389, 2> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<379>, ZPZV<2»; };  // NOLINT
05299     template<> struct ConwayPolynomial<389, 3> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<387»; };  // NOLINT
05300     template<> struct ConwayPolynomial<389, 4> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<266>, ZPZV<2»; };  // NOLINT
05301     template<> struct ConwayPolynomial<389, 5> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<387»; };  // NOLINT
05302     template<> struct ConwayPolynomial<389, 6> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<218>, ZPZV<339>, ZPZV<255>, ZPZV<2»; };  // NOLINT
05303     template<> struct ConwayPolynomial<389, 7> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<387»; };  // NOLINT
05304     template<> struct ConwayPolynomial<389, 8> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<351>, ZPZV<19>, ZPZV<290>, ZPZV<2»; };  //
      NOLINT
05305     template<> struct ConwayPolynomial<389, 9> { using ZPZ = aerobus::zpz<389>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<258>, ZPZV<308>, ZPZV<387»;
      };  // NOLINT
05306     template<> struct ConwayPolynomial<397, 1> { using ZPZ = aerobus::zpz<397>; using type =
      POLYV<ZPZV<1>, ZPZV<392»; };  // NOLINT
05307     template<> struct ConwayPolynomial<397, 2> { using ZPZ = aerobus::zpz<397>; using type =
      POLYV<ZPZV<1>, ZPZV<392>, ZPZV<5»; };  // NOLINT
05308     template<> struct ConwayPolynomial<397, 3> { using ZPZ = aerobus::zpz<397>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<392>; };  // NOLINT
05309     template<> struct ConwayPolynomial<397, 4> { using ZPZ = aerobus::zpz<397>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<363>, ZPZV<5>; };  // NOLINT
05310     template<> struct ConwayPolynomial<397, 5> { using ZPZ = aerobus::zpz<397>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<392>; };  // NOLINT
05311     template<> struct ConwayPolynomial<397, 6> { using ZPZ = aerobus::zpz<397>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<382>, ZPZV<274>, ZPZV<287>, ZPZV<5>; };  // NOLINT
05312     template<> struct ConwayPolynomial<397, 7> { using ZPZ = aerobus::zpz<397>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<392>; };  // NOLINT
05313     template<> struct ConwayPolynomial<397, 8> { using ZPZ = aerobus::zpz<397>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<375>, ZPZV<255>, ZPZV<203>, ZPZV<5>; };  //
    NOLINT
05314     template<> struct ConwayPolynomial<397, 9> { using ZPZ = aerobus::zpz<397>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<166>, ZPZV<252>, ZPZV<392>;
    };  // NOLINT
05315     template<> struct ConwayPolynomial<401, 1> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<398>; };  // NOLINT
05316     template<> struct ConwayPolynomial<401, 2> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<396>, ZPZV<3>; };  // NOLINT
05317     template<> struct ConwayPolynomial<401, 3> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<398>; };  // NOLINT
05318     template<> struct ConwayPolynomial<401, 4> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<372>, ZPZV<3>; };  // NOLINT
05319     template<> struct ConwayPolynomial<401, 5> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<398>; };  // NOLINT
05320     template<> struct ConwayPolynomial<401, 6> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<115>, ZPZV<81>, ZPZV<51>, ZPZV<3>; };  // NOLINT
05321     template<> struct ConwayPolynomial<401, 7> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<398>; };  // NOLINT
05322     template<> struct ConwayPolynomial<401, 8> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<380>, ZPZV<113>, ZPZV<164>, ZPZV<3>; };  //
    NOLINT
05323     template<> struct ConwayPolynomial<401, 9> { using ZPZ = aerobus::zpz<401>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<199>, ZPZV<158>, ZPZV<398>;
    };  // NOLINT
05324     template<> struct ConwayPolynomial<409, 1> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<388>; };  // NOLINT
05325     template<> struct ConwayPolynomial<409, 2> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<404>, ZPZV<21>; };  // NOLINT
05326     template<> struct ConwayPolynomial<409, 3> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<388>; };  // NOLINT
05327     template<> struct ConwayPolynomial<409, 4> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<407>, ZPZV<21>; };  // NOLINT
05328     template<> struct ConwayPolynomial<409, 5> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<388>; };  // NOLINT
05329     template<> struct ConwayPolynomial<409, 6> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<372>, ZPZV<53>, ZPZV<364>, ZPZV<21>; };  // NOLINT
05330     template<> struct ConwayPolynomial<409, 7> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<388>; };  // NOLINT
05331     template<> struct ConwayPolynomial<409, 8> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<256>, ZPZV<69>, ZPZV<396>, ZPZV<21>; };  //
    NOLINT
05332     template<> struct ConwayPolynomial<409, 9> { using ZPZ = aerobus::zpz<409>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<318>, ZPZV<211>, ZPZV<388>;
    };  // NOLINT
05333     template<> struct ConwayPolynomial<419, 1> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<417>; };  // NOLINT
05334     template<> struct ConwayPolynomial<419, 2> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<418>, ZPZV<2>; };  // NOLINT
05335     template<> struct ConwayPolynomial<419, 3> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<417>; };  // NOLINT
05336     template<> struct ConwayPolynomial<419, 4> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<373>, ZPZV<2>; };  // NOLINT
05337     template<> struct ConwayPolynomial<419, 5> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<417>; };  // NOLINT
05338     template<> struct ConwayPolynomial<419, 6> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<411>, ZPZV<33>, ZPZV<257>, ZPZV<2>; };  // NOLINT
05339     template<> struct ConwayPolynomial<419, 7> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<417>; };  // NOLINT
05340     template<> struct ConwayPolynomial<419, 8> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<234>, ZPZV<388>, ZPZV<151>, ZPZV<2>; };  //
    NOLINT
05341     template<> struct ConwayPolynomial<419, 9> { using ZPZ = aerobus::zpz<419>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<93>, ZPZV<386>, ZPZV<417>;
    };  // NOLINT
05342     template<> struct ConwayPolynomial<421, 1> { using ZPZ = aerobus::zpz<421>; using type =
    POLYV<ZPZV<1>, ZPZV<419>; };  // NOLINT
05343     template<> struct ConwayPolynomial<421, 2> { using ZPZ = aerobus::zpz<421>; using type =
    POLYV<ZPZV<1>, ZPZV<417>, ZPZV<2>; };  // NOLINT
05344     template<> struct ConwayPolynomial<421, 3> { using ZPZ = aerobus::zpz<421>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<419>; };  // NOLINT
05345     template<> struct ConwayPolynomial<421, 4> { using ZPZ = aerobus::zpz<421>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<10>, ZPZV<257>, ZPZV<2>; };  // NOLINT
05346     template<> struct ConwayPolynomial<421, 5> { using ZPZ = aerobus::zpz<421>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<419>; };  // NOLINT
05347     template<> struct ConwayPolynomial<421, 6> { using ZPZ = aerobus::zpz<421>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<111>, ZPZV<342>, ZPZV<41>, ZPZV<2>; };  // NOLINT
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05348     template<> struct ConwayPolynomial<421, 7> { using ZPZ = aerobus::zpz<421>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<21>, ZPZV<419>; };  // NOLINT
05349     template<> struct ConwayPolynomial<421, 8> { using ZPZ = aerobus::zpz<421>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<389>, ZPZV<32>, ZPZV<77>, ZPZV<2>; };  //
      NOLINT
05350     template<> struct ConwayPolynomial<421, 9> { using ZPZ = aerobus::zpz<421>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<394>, ZPZV<145>, ZPZV<419>;
      };  // NOLINT
05351     template<> struct ConwayPolynomial<431, 1> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<424>; };  // NOLINT
05352     template<> struct ConwayPolynomial<431, 2> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<430>, ZPZV<7>; };  // NOLINT
05353     template<> struct ConwayPolynomial<431, 3> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<424>; };  // NOLINT
05354     template<> struct ConwayPolynomial<431, 4> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<323>, ZPZV<7>; };  // NOLINT
05355     template<> struct ConwayPolynomial<431, 5> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<424>; };  // NOLINT
05356     template<> struct ConwayPolynomial<431, 6> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<161>, ZPZV<202>, ZPZV<182>, ZPZV<7>; };  // NOLINT
05357     template<> struct ConwayPolynomial<431, 7> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<424>; };  // NOLINT
05358     template<> struct ConwayPolynomial<431, 8> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<243>, ZPZV<286>, ZPZV<115>, ZPZV<7>; };  //
      NOLINT
05359     template<> struct ConwayPolynomial<431, 9> { using ZPZ = aerobus::zpz<431>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<71>, ZPZV<329>, ZPZV<424>;
      };  // NOLINT
05360     template<> struct ConwayPolynomial<433, 1> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<428>; };  // NOLINT
05361     template<> struct ConwayPolynomial<433, 2> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<432>, ZPZV<5>; };  // NOLINT
05362     template<> struct ConwayPolynomial<433, 3> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<428>; };  // NOLINT
05363     template<> struct ConwayPolynomial<433, 4> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<402>, ZPZV<5>; };  // NOLINT
05364     template<> struct ConwayPolynomial<433, 5> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<428>; };  // NOLINT
05365     template<> struct ConwayPolynomial<433, 6> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<244>, ZPZV<353>, ZPZV<360>, ZPZV<5>; };  // NOLINT
05366     template<> struct ConwayPolynomial<433, 7> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<428>; };  // NOLINT
05367     template<> struct ConwayPolynomial<433, 8> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<347>, ZPZV<32>, ZPZV<39>, ZPZV<5>; };  //
      NOLINT
05368     template<> struct ConwayPolynomial<433, 9> { using ZPZ = aerobus::zpz<433>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<27>, ZPZV<232>, ZPZV<45>, ZPZV<428>;
      };  // NOLINT
05369     template<> struct ConwayPolynomial<439, 1> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<424>; };  // NOLINT
05370     template<> struct ConwayPolynomial<439, 2> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<436>, ZPZV<15>; };  // NOLINT
05371     template<> struct ConwayPolynomial<439, 3> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<424>; };  // NOLINT
05372     template<> struct ConwayPolynomial<439, 4> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<323>, ZPZV<15>; };  // NOLINT
05373     template<> struct ConwayPolynomial<439, 5> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<424>; };  // NOLINT
05374     template<> struct ConwayPolynomial<439, 6> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<324>, ZPZV<190>, ZPZV<15>; };  // NOLINT
05375     template<> struct ConwayPolynomial<439, 7> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<424>; };  // NOLINT
05376     template<> struct ConwayPolynomial<439, 8> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<359>, ZPZV<296>, ZPZV<266>, ZPZV<15>; };  //
      NOLINT
05377     template<> struct ConwayPolynomial<439, 9> { using ZPZ = aerobus::zpz<439>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<342>, ZPZV<254>, ZPZV<424>;
      };  // NOLINT
05378     template<> struct ConwayPolynomial<443, 1> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<441>; };  // NOLINT
05379     template<> struct ConwayPolynomial<443, 2> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<437>, ZPZV<2>; };  // NOLINT
05380     template<> struct ConwayPolynomial<443, 3> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<441>; };  // NOLINT
05381     template<> struct ConwayPolynomial<443, 4> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<383>, ZPZV<2>; };  // NOLINT
05382     template<> struct ConwayPolynomial<443, 5> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<441>; };  // NOLINT
05383     template<> struct ConwayPolynomial<443, 6> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<298>, ZPZV<218>, ZPZV<41>, ZPZV<2>; };  // NOLINT
05384     template<> struct ConwayPolynomial<443, 7> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<441>; };  // NOLINT
05385     template<> struct ConwayPolynomial<443, 8> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<437>, ZPZV<217>, ZPZV<290>, ZPZV<2>; };  //
      NOLINT
05386     template<> struct ConwayPolynomial<443, 9> { using ZPZ = aerobus::zpz<443>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<125>, ZPZV<109>, ZPZV<441>;
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      };  // NOLINT
05387     template<> struct ConwayPolynomial<449, 1> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<446>>; };  // NOLINT
05388     template<> struct ConwayPolynomial<449, 2> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<444>, ZPZV<3>>; };  // NOLINT
05389     template<> struct ConwayPolynomial<449, 3> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<446>>; };  // NOLINT
05390     template<> struct ConwayPolynomial<449, 4> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<249>, ZPZV<3>>; };  // NOLINT
05391     template<> struct ConwayPolynomial<449, 5> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<446>>; };  // NOLINT
05392     template<> struct ConwayPolynomial<449, 6> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<437>, ZPZV<293>, ZPZV<69>, ZPZV<3>>; };  // NOLINT
05393     template<> struct ConwayPolynomial<449, 7> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<28>, ZPZV<446>>; };  // NOLINT
05394     template<> struct ConwayPolynomial<449, 8> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<361>, ZPZV<348>, ZPZV<124>, ZPZV<3>>; };  //
      NOLINT
05395     template<> struct ConwayPolynomial<449, 9> { using ZPZ = aerobus::zpz<449>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<226>, ZPZV<9>, ZPZV<446>>; };
      // NOLINT
05396     template<> struct ConwayPolynomial<457, 1> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<444>>; };  // NOLINT
05397     template<> struct ConwayPolynomial<457, 2> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<454>, ZPZV<13>>; };  // NOLINT
05398     template<> struct ConwayPolynomial<457, 3> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<444>>; };  // NOLINT
05399     template<> struct ConwayPolynomial<457, 4> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<407>, ZPZV<13>>; };  // NOLINT
05400     template<> struct ConwayPolynomial<457, 5> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<444>>; };  // NOLINT
05401     template<> struct ConwayPolynomial<457, 6> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<205>, ZPZV<389>, ZPZV<266>, ZPZV<13>>; };  // NOLINT
05402     template<> struct ConwayPolynomial<457, 7> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<444>>; };  // NOLINT
05403     template<> struct ConwayPolynomial<457, 8> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<365>, ZPZV<296>, ZPZV<412>, ZPZV<13>>; };  //
      NOLINT
05404     template<> struct ConwayPolynomial<457, 9> { using ZPZ = aerobus::zpz<457>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<354>, ZPZV<84>, ZPZV<444>>;
      };  // NOLINT
05405     template<> struct ConwayPolynomial<461, 1> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<459>>; };  // NOLINT
05406     template<> struct ConwayPolynomial<461, 2> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<460>, ZPZV<2>>; };  // NOLINT
05407     template<> struct ConwayPolynomial<461, 3> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<459>>; };  // NOLINT
05408     template<> struct ConwayPolynomial<461, 4> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<393>, ZPZV<2>>; };  // NOLINT
05409     template<> struct ConwayPolynomial<461, 5> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<459>>; };  // NOLINT
05410     template<> struct ConwayPolynomial<461, 6> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<439>, ZPZV<432>, ZPZV<329>, ZPZV<2>>; };  // NOLINT
05411     template<> struct ConwayPolynomial<461, 7> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<459>>; };  // NOLINT
05412     template<> struct ConwayPolynomial<461, 8> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<388>, ZPZV<449>, ZPZV<321>, ZPZV<2>>; };  //
      NOLINT
05413     template<> struct ConwayPolynomial<461, 9> { using ZPZ = aerobus::zpz<461>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<210>, ZPZV<276>, ZPZV<459>>;
      };  // NOLINT
05414     template<> struct ConwayPolynomial<463, 1> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<460>>; };  // NOLINT
05415     template<> struct ConwayPolynomial<463, 2> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<461>, ZPZV<3>>; };  // NOLINT
05416     template<> struct ConwayPolynomial<463, 3> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<10>, ZPZV<460>>; };  // NOLINT
05417     template<> struct ConwayPolynomial<463, 4> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<17>, ZPZV<262>, ZPZV<3>>; };  // NOLINT
05418     template<> struct ConwayPolynomial<463, 5> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<460>>; };  // NOLINT
05419     template<> struct ConwayPolynomial<463, 6> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<462>, ZPZV<51>, ZPZV<110>, ZPZV<3>>; };  // NOLINT
05420     template<> struct ConwayPolynomial<463, 7> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<460>>; };  // NOLINT
05421     template<> struct ConwayPolynomial<463, 8> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<234>, ZPZV<414>, ZPZV<396>, ZPZV<3>>; };  //
      NOLINT
05422     template<> struct ConwayPolynomial<463, 9> { using ZPZ = aerobus::zpz<463>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<433>, ZPZV<227>, ZPZV<460>>;
      };  // NOLINT
05423     template<> struct ConwayPolynomial<467, 1> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<465>>; };  // NOLINT
05424     template<> struct ConwayPolynomial<467, 2> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<463>, ZPZV<2>>; };  // NOLINT
05425     template<> struct ConwayPolynomial<467, 3> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<465>>; };  // NOLINT
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05426     template<> struct ConwayPolynomial<467, 4> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<14>, ZPZV<353>, ZPZV<2>>; };  // NOLINT
05427     template<> struct ConwayPolynomial<467, 5> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<465>>; };  // NOLINT
05428     template<> struct ConwayPolynomial<467, 6> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<123>, ZPZV<62>, ZPZV<237>, ZPZV<2>>; };  // NOLINT
05429     template<> struct ConwayPolynomial<467, 7> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<465>>; };  // NOLINT
05430     template<> struct ConwayPolynomial<467, 8> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<318>, ZPZV<413>, ZPZV<289>, ZPZV<2>>; };  //
      NOLINT
05431     template<> struct ConwayPolynomial<467, 9> { using ZPZ = aerobus::zpz<467>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<397>, ZPZV<447>, ZPZV<465>>;
      };  // NOLINT
05432     template<> struct ConwayPolynomial<479, 1> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<466>>; };  // NOLINT
05433     template<> struct ConwayPolynomial<479, 2> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<474>, ZPZV<13>>; };  // NOLINT
05434     template<> struct ConwayPolynomial<479, 3> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<466>>; };  // NOLINT
05435     template<> struct ConwayPolynomial<479, 4> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<386>, ZPZV<13>>; };  // NOLINT
05436     template<> struct ConwayPolynomial<479, 5> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<466>>; };  // NOLINT
05437     template<> struct ConwayPolynomial<479, 6> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<243>, ZPZV<287>, ZPZV<334>, ZPZV<13>>; };  // NOLINT
05438     template<> struct ConwayPolynomial<479, 7> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<466>>; };  // NOLINT
05439     template<> struct ConwayPolynomial<479, 8> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<247>, ZPZV<440>, ZPZV<17>, ZPZV<13>>; };  //
      NOLINT
05440     template<> struct ConwayPolynomial<479, 9> { using ZPZ = aerobus::zpz<479>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<3>, ZPZV<185>, ZPZV<466>>; };
      // NOLINT
05441     template<> struct ConwayPolynomial<487, 1> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<484>>; };  // NOLINT
05442     template<> struct ConwayPolynomial<487, 2> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<485>, ZPZV<3>>; };  // NOLINT
05443     template<> struct ConwayPolynomial<487, 3> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<484>>; };  // NOLINT
05444     template<> struct ConwayPolynomial<487, 4> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<483>, ZPZV<3>>; };  // NOLINT
05445     template<> struct ConwayPolynomial<487, 5> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<484>>; };  // NOLINT
05446     template<> struct ConwayPolynomial<487, 6> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<450>, ZPZV<427>, ZPZV<185>, ZPZV<3>>; };  // NOLINT
05447     template<> struct ConwayPolynomial<487, 7> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<484>>; };  // NOLINT
05448     template<> struct ConwayPolynomial<487, 8> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<283>, ZPZV<249>, ZPZV<137>, ZPZV<3>>; };  //
      NOLINT
05449     template<> struct ConwayPolynomial<487, 9> { using ZPZ = aerobus::zpz<487>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<271>, ZPZV<447>, ZPZV<484>>;
      };  // NOLINT
05450     template<> struct ConwayPolynomial<491, 1> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<489>>; };  // NOLINT
05451     template<> struct ConwayPolynomial<491, 2> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<487>, ZPZV<2>>; };  // NOLINT
05452     template<> struct ConwayPolynomial<491, 3> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<489>>; };  // NOLINT
05453     template<> struct ConwayPolynomial<491, 4> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<360>, ZPZV<2>>; };  // NOLINT
05454     template<> struct ConwayPolynomial<491, 5> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<489>>; };  // NOLINT
05455     template<> struct ConwayPolynomial<491, 6> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<369>, ZPZV<402>, ZPZV<125>, ZPZV<2>>; };  // NOLINT
05456     template<> struct ConwayPolynomial<491, 7> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<489>>; };  // NOLINT
05457     template<> struct ConwayPolynomial<491, 8> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<378>, ZPZV<372>, ZPZV<216>, ZPZV<2>>; };  //
      NOLINT
05458     template<> struct ConwayPolynomial<491, 9> { using ZPZ = aerobus::zpz<491>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<149>, ZPZV<453>, ZPZV<489>>;
      };  // NOLINT
05459     template<> struct ConwayPolynomial<499, 1> { using ZPZ = aerobus::zpz<499>; using type =
      POLYV<ZPZV<1>, ZPZV<492>>; };  // NOLINT
05460     template<> struct ConwayPolynomial<499, 2> { using ZPZ = aerobus::zpz<499>; using type =
      POLYV<ZPZV<1>, ZPZV<493>, ZPZV<7>>; };  // NOLINT
05461     template<> struct ConwayPolynomial<499, 3> { using ZPZ = aerobus::zpz<499>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<492>>; };  // NOLINT
05462     template<> struct ConwayPolynomial<499, 4> { using ZPZ = aerobus::zpz<499>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<495>, ZPZV<7>>; };  // NOLINT
05463     template<> struct ConwayPolynomial<499, 5> { using ZPZ = aerobus::zpz<499>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<492>>; };  // NOLINT
05464     template<> struct ConwayPolynomial<499, 6> { using ZPZ = aerobus::zpz<499>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<407>, ZPZV<191>, ZPZV<78>, ZPZV<7>>; };  // NOLINT
05465     template<> struct ConwayPolynomial<499, 7> { using ZPZ = aerobus::zpz<499>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<492»; };  // NOLINT
05466     template<> struct ConwayPolynomial<499, 8> { using ZPZ = aerobus::zpz<499>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<288>, ZPZV<309>, ZPZV<200>, ZPZV<7»; };  //
    NOLINT
05467     template<> struct ConwayPolynomial<499, 9> { using ZPZ = aerobus::zpz<499>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<491>, ZPZV<222>, ZPZV<492»;
    };  // NOLINT
05468     template<> struct ConwayPolynomial<503, 1> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<498»; };  // NOLINT
05469     template<> struct ConwayPolynomial<503, 2> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<498>, ZPZV<5»; };  // NOLINT
05470     template<> struct ConwayPolynomial<503, 3> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<498»; };  // NOLINT
05471     template<> struct ConwayPolynomial<503, 4> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<325>, ZPZV<5»; };  // NOLINT
05472     template<> struct ConwayPolynomial<503, 5> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<498»; };  // NOLINT
05473     template<> struct ConwayPolynomial<503, 6> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<380>, ZPZV<292>, ZPZV<255>, ZPZV<5»; };  // NOLINT
05474     template<> struct ConwayPolynomial<503, 7> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<498»; };  // NOLINT
05475     template<> struct ConwayPolynomial<503, 8> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<441>, ZPZV<203>, ZPZV<316>, ZPZV<5»; };  //
    NOLINT
05476     template<> struct ConwayPolynomial<503, 9> { using ZPZ = aerobus::zpz<503>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<158>, ZPZV<337>, ZPZV<498»;
    };  // NOLINT
05477     template<> struct ConwayPolynomial<509, 1> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<507»; };  // NOLINT
05478     template<> struct ConwayPolynomial<509, 2> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<508>, ZPZV<2»; };  // NOLINT
05479     template<> struct ConwayPolynomial<509, 3> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<507»; };  // NOLINT
05480     template<> struct ConwayPolynomial<509, 4> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<408>, ZPZV<2»; };  // NOLINT
05481     template<> struct ConwayPolynomial<509, 5> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<507»; };  // NOLINT
05482     template<> struct ConwayPolynomial<509, 6> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<350>, ZPZV<232>, ZPZV<41>, ZPZV<2»; };  // NOLINT
05483     template<> struct ConwayPolynomial<509, 7> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<507»; };  // NOLINT
05484     template<> struct ConwayPolynomial<509, 8> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<420>, ZPZV<473>, ZPZV<382>, ZPZV<2»; };  //
    NOLINT
05485     template<> struct ConwayPolynomial<509, 9> { using ZPZ = aerobus::zpz<509>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<314>, ZPZV<28>, ZPZV<507»;
    };  // NOLINT
05486     template<> struct ConwayPolynomial<521, 1> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<518»; };  // NOLINT
05487     template<> struct ConwayPolynomial<521, 2> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<515>, ZPZV<3»; };  // NOLINT
05488     template<> struct ConwayPolynomial<521, 3> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<518»; };  // NOLINT
05489     template<> struct ConwayPolynomial<521, 4> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<509>, ZPZV<3»; };  // NOLINT
05490     template<> struct ConwayPolynomial<521, 5> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<518»; };  // NOLINT
05491     template<> struct ConwayPolynomial<521, 6> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<315>, ZPZV<153>, ZPZV<280>, ZPZV<3»; };  // NOLINT
05492     template<> struct ConwayPolynomial<521, 7> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<518»; };  // NOLINT
05493     template<> struct ConwayPolynomial<521, 8> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<462>, ZPZV<407>, ZPZV<312>, ZPZV<3»; };  //
    NOLINT
05494     template<> struct ConwayPolynomial<521, 9> { using ZPZ = aerobus::zpz<521>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<181>, ZPZV<483>, ZPZV<518»;
    };  // NOLINT
05495     template<> struct ConwayPolynomial<523, 1> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<521»; };  // NOLINT
05496     template<> struct ConwayPolynomial<523, 2> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<522>, ZPZV<2»; };  // NOLINT
05497     template<> struct ConwayPolynomial<523, 3> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<521»; };  // NOLINT
05498     template<> struct ConwayPolynomial<523, 4> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<382>, ZPZV<2»; };  // NOLINT
05499     template<> struct ConwayPolynomial<523, 5> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<521»; };  // NOLINT
05500     template<> struct ConwayPolynomial<523, 6> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<475>, ZPZV<475>, ZPZV<371>, ZPZV<2»; };  // NOLINT
05501     template<> struct ConwayPolynomial<523, 7> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<521»; };  // NOLINT
05502     template<> struct ConwayPolynomial<523, 8> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<518>, ZPZV<184>, ZPZV<380>, ZPZV<2»; };  //
    NOLINT
05503     template<> struct ConwayPolynomial<523, 9> { using ZPZ = aerobus::zpz<523>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<342>, ZPZV<145>, ZPZV<521»;
    };  // NOLINT
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05504     template<> struct ConwayPolynomial<541, 1> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<539>>; };  // NOLINT
05505     template<> struct ConwayPolynomial<541, 2> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<537>, ZPZV<2>>; };  // NOLINT
05506     template<> struct ConwayPolynomial<541, 3> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<539>>; };  // NOLINT
05507     template<> struct ConwayPolynomial<541, 4> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<333>, ZPZV<2>>; };  // NOLINT
05508     template<> struct ConwayPolynomial<541, 5> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<539>>; };  // NOLINT
05509     template<> struct ConwayPolynomial<541, 6> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<239>, ZPZV<320>, ZPZV<69>, ZPZV<2>>; };  // NOLINT
05510     template<> struct ConwayPolynomial<541, 7> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<539>>; };  // NOLINT
05511     template<> struct ConwayPolynomial<541, 8> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<376>, ZPZV<108>, ZPZV<113>, ZPZV<2>>; };  //
      NOLINT
05512     template<> struct ConwayPolynomial<541, 9> { using ZPZ = aerobus::zpz<541>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<340>, ZPZV<318>, ZPZV<539>>;
      };  // NOLINT
05513     template<> struct ConwayPolynomial<547, 1> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<545>>; };  // NOLINT
05514     template<> struct ConwayPolynomial<547, 2> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<543>, ZPZV<2>>; };  // NOLINT
05515     template<> struct ConwayPolynomial<547, 3> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<545>>; };  // NOLINT
05516     template<> struct ConwayPolynomial<547, 4> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<334>, ZPZV<2>>; };  // NOLINT
05517     template<> struct ConwayPolynomial<547, 5> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<545>>; };  // NOLINT
05518     template<> struct ConwayPolynomial<547, 6> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<334>, ZPZV<153>, ZPZV<423>, ZPZV<2>>; };  // NOLINT
05519     template<> struct ConwayPolynomial<547, 7> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<545>>; };  // NOLINT
05520     template<> struct ConwayPolynomial<547, 8> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<368>, ZPZV<20>, ZPZV<180>, ZPZV<2>>; };  //
      NOLINT
05521     template<> struct ConwayPolynomial<547, 9> { using ZPZ = aerobus::zpz<547>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<238>, ZPZV<263>, ZPZV<545>>;
      };  // NOLINT
05522     template<> struct ConwayPolynomial<557, 1> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<555>>; };  // NOLINT
05523     template<> struct ConwayPolynomial<557, 2> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<553>, ZPZV<2>>; };  // NOLINT
05524     template<> struct ConwayPolynomial<557, 3> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<555>>; };  // NOLINT
05525     template<> struct ConwayPolynomial<557, 4> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<430>, ZPZV<2>>; };  // NOLINT
05526     template<> struct ConwayPolynomial<557, 5> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<555>>; };  // NOLINT
05527     template<> struct ConwayPolynomial<557, 6> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<202>, ZPZV<192>, ZPZV<253>, ZPZV<2>>; };  // NOLINT
05528     template<> struct ConwayPolynomial<557, 7> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<555>>; };  // NOLINT
05529     template<> struct ConwayPolynomial<557, 8> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<480>, ZPZV<384>, ZPZV<113>, ZPZV<2>>; };  //
      NOLINT
05530     template<> struct ConwayPolynomial<557, 9> { using ZPZ = aerobus::zpz<557>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<456>, ZPZV<434>, ZPZV<555>>;
      };  // NOLINT
05531     template<> struct ConwayPolynomial<563, 1> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<561>>; };  // NOLINT
05532     template<> struct ConwayPolynomial<563, 2> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<559>, ZPZV<2>>; };  // NOLINT
05533     template<> struct ConwayPolynomial<563, 3> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<561>>; };  // NOLINT
05534     template<> struct ConwayPolynomial<563, 4> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<20>, ZPZV<399>, ZPZV<2>>; };  // NOLINT
05535     template<> struct ConwayPolynomial<563, 5> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<561>>; };  // NOLINT
05536     template<> struct ConwayPolynomial<563, 6> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<122>, ZPZV<303>, ZPZV<246>, ZPZV<2>>; };  // NOLINT
05537     template<> struct ConwayPolynomial<563, 7> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<561>>; };  // NOLINT
05538     template<> struct ConwayPolynomial<563, 8> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<503>, ZPZV<176>, ZPZV<509>, ZPZV<2>>; };  //
      NOLINT
05539     template<> struct ConwayPolynomial<563, 9> { using ZPZ = aerobus::zpz<563>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<15>, ZPZV<19>, ZPZV<561>>; };
      // NOLINT
05540     template<> struct ConwayPolynomial<569, 1> { using ZPZ = aerobus::zpz<569>; using type =
      POLYV<ZPZV<1>, ZPZV<566>>; };  // NOLINT
05541     template<> struct ConwayPolynomial<569, 2> { using ZPZ = aerobus::zpz<569>; using type =
      POLYV<ZPZV<1>, ZPZV<568>, ZPZV<3>>; };  // NOLINT
05542     template<> struct ConwayPolynomial<569, 3> { using ZPZ = aerobus::zpz<569>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<566>>; };  // NOLINT
05543     template<> struct ConwayPolynomial<569, 4> { using ZPZ = aerobus::zpz<569>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<381>, ZPZV<3»; };  // NOLINT
05544     template<> struct ConwayPolynomial<569, 5> { using ZPZ = aerobus::zpz<569>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<566»; };  // NOLINT
05545     template<> struct ConwayPolynomial<569, 6> { using ZPZ = aerobus::zpz<569>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<50>, ZPZV<263>, ZPZV<480>, ZPZV<3»; };  // NOLINT
05546     template<> struct ConwayPolynomial<569, 7> { using ZPZ = aerobus::zpz<569>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<566»; };  // NOLINT
05547     template<> struct ConwayPolynomial<569, 8> { using ZPZ = aerobus::zpz<569>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<527>, ZPZV<173>, ZPZV<241>, ZPZV<3»; };  //
    NOLINT
05548     template<> struct ConwayPolynomial<569, 9> { using ZPZ = aerobus::zpz<569>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<478>, ZPZV<566>, ZPZV<566»;
    };  // NOLINT
05549     template<> struct ConwayPolynomial<571, 1> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<568»; };  // NOLINT
05550     template<> struct ConwayPolynomial<571, 2> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<570>, ZPZV<3»; };  // NOLINT
05551     template<> struct ConwayPolynomial<571, 3> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<568»; };  // NOLINT
05552     template<> struct ConwayPolynomial<571, 4> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<402>, ZPZV<3»; };  // NOLINT
05553     template<> struct ConwayPolynomial<571, 5> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<568»; };  // NOLINT
05554     template<> struct ConwayPolynomial<571, 6> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<221>, ZPZV<295>, ZPZV<33>, ZPZV<3»; };  // NOLINT
05555     template<> struct ConwayPolynomial<571, 7> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<568»; };  // NOLINT
05556     template<> struct ConwayPolynomial<571, 8> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<363>, ZPZV<119>, ZPZV<371>, ZPZV<3»; };  //
    NOLINT
05557     template<> struct ConwayPolynomial<571, 9> { using ZPZ = aerobus::zpz<571>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<34>, ZPZV<545>, ZPZV<179>, ZPZV<568»;
    };  // NOLINT
05558     template<> struct ConwayPolynomial<577, 1> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<572»; };  // NOLINT
05559     template<> struct ConwayPolynomial<577, 2> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<572>, ZPZV<5»; };  // NOLINT
05560     template<> struct ConwayPolynomial<577, 3> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<572»; };  // NOLINT
05561     template<> struct ConwayPolynomial<577, 4> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<494>, ZPZV<5»; };  // NOLINT
05562     template<> struct ConwayPolynomial<577, 5> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<572»; };  // NOLINT
05563     template<> struct ConwayPolynomial<577, 6> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<450>, ZPZV<25>, ZPZV<283>, ZPZV<5»; };  // NOLINT
05564     template<> struct ConwayPolynomial<577, 7> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<572»; };  // NOLINT
05565     template<> struct ConwayPolynomial<577, 8> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<450>, ZPZV<545>, ZPZV<321>, ZPZV<5»; };  //
    NOLINT
05566     template<> struct ConwayPolynomial<577, 9> { using ZPZ = aerobus::zpz<577>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<576>, ZPZV<449>, ZPZV<572»;
    };  // NOLINT
05567     template<> struct ConwayPolynomial<587, 1> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<585»; };  // NOLINT
05568     template<> struct ConwayPolynomial<587, 2> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<583>, ZPZV<2»; };  // NOLINT
05569     template<> struct ConwayPolynomial<587, 3> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<585»; };  // NOLINT
05570     template<> struct ConwayPolynomial<587, 4> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<16>, ZPZV<444>, ZPZV<2»; };  // NOLINT
05571     template<> struct ConwayPolynomial<587, 5> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<585»; };  // NOLINT
05572     template<> struct ConwayPolynomial<587, 6> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<204>, ZPZV<121>, ZPZV<226>, ZPZV<2»; };  // NOLINT
05573     template<> struct ConwayPolynomial<587, 7> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<585»; };  // NOLINT
05574     template<> struct ConwayPolynomial<587, 8> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<492>, ZPZV<44>, ZPZV<91>, ZPZV<2»; };  //
    NOLINT
05575     template<> struct ConwayPolynomial<587, 9> { using ZPZ = aerobus::zpz<587>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<333>, ZPZV<55>, ZPZV<585»;
    };  // NOLINT
05576     template<> struct ConwayPolynomial<593, 1> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<590»; };  // NOLINT
05577     template<> struct ConwayPolynomial<593, 2> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<592>, ZPZV<3»; };  // NOLINT
05578     template<> struct ConwayPolynomial<593, 3> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<590»; };  // NOLINT
05579     template<> struct ConwayPolynomial<593, 4> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<419>, ZPZV<3»; };  // NOLINT
05580     template<> struct ConwayPolynomial<593, 5> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<590»; };  // NOLINT
05581     template<> struct ConwayPolynomial<593, 6> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<345>, ZPZV<65>, ZPZV<478>, ZPZV<3»; };  // NOLINT
05582     template<> struct ConwayPolynomial<593, 7> { using ZPZ = aerobus::zpz<593>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<590»; };  // NOLINT
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05583     template<> struct ConwayPolynomial<593, 8> { using ZPZ = aerobus::zpz<593>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<350>, ZPZV<291>, ZPZV<495>, ZPZV<3>>; };  //
      NOLINT
05584     template<> struct ConwayPolynomial<593, 9> { using ZPZ = aerobus::zpz<593>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<223>, ZPZV<523>, ZPZV<590>>;
      };  // NOLINT
05585     template<> struct ConwayPolynomial<599, 1> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<592>>; };  // NOLINT
05586     template<> struct ConwayPolynomial<599, 2> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<598>, ZPZV<7>>; };  // NOLINT
05587     template<> struct ConwayPolynomial<599, 3> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<592>>; };  // NOLINT
05588     template<> struct ConwayPolynomial<599, 4> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<419>, ZPZV<7>>; };  // NOLINT
05589     template<> struct ConwayPolynomial<599, 5> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<592>>; };  // NOLINT
05590     template<> struct ConwayPolynomial<599, 6> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<515>, ZPZV<274>, ZPZV<586>, ZPZV<7>>; };  // NOLINT
05591     template<> struct ConwayPolynomial<599, 7> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<592>>; };  // NOLINT
05592     template<> struct ConwayPolynomial<599, 8> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<440>, ZPZV<37>, ZPZV<124>, ZPZV<7>>; };  //
      NOLINT
05593     template<> struct ConwayPolynomial<599, 9> { using ZPZ = aerobus::zpz<599>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<114>, ZPZV<98>, ZPZV<592>>;
      };  // NOLINT
05594     template<> struct ConwayPolynomial<601, 1> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<594>>; };  // NOLINT
05595     template<> struct ConwayPolynomial<601, 2> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<598>, ZPZV<7>>; };  // NOLINT
05596     template<> struct ConwayPolynomial<601, 3> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<594>>; };  // NOLINT
05597     template<> struct ConwayPolynomial<601, 4> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<14>, ZPZV<347>, ZPZV<7>>; };  // NOLINT
05598     template<> struct ConwayPolynomial<601, 5> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<594>>; };  // NOLINT
05599     template<> struct ConwayPolynomial<601, 6> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<128>, ZPZV<440>, ZPZV<49>, ZPZV<7>>; };  // NOLINT
05600     template<> struct ConwayPolynomial<601, 7> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<594>>; };  // NOLINT
05601     template<> struct ConwayPolynomial<601, 8> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<550>, ZPZV<241>, ZPZV<490>, ZPZV<7>>; };  //
      NOLINT
05602     template<> struct ConwayPolynomial<601, 9> { using ZPZ = aerobus::zpz<601>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<487>, ZPZV<590>, ZPZV<594>>;
      };  // NOLINT
05603     template<> struct ConwayPolynomial<607, 1> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<604>>; };  // NOLINT
05604     template<> struct ConwayPolynomial<607, 2> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<606>, ZPZV<3>>; };  // NOLINT
05605     template<> struct ConwayPolynomial<607, 3> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<604>>; };  // NOLINT
05606     template<> struct ConwayPolynomial<607, 4> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<449>, ZPZV<3>>; };  // NOLINT
05607     template<> struct ConwayPolynomial<607, 5> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<604>>; };  // NOLINT
05608     template<> struct ConwayPolynomial<607, 6> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<45>, ZPZV<478>, ZPZV<3>>; };  // NOLINT
05609     template<> struct ConwayPolynomial<607, 7> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<604>>; };  // NOLINT
05610     template<> struct ConwayPolynomial<607, 8> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<468>, ZPZV<35>, ZPZV<449>, ZPZV<3>>; };  //
      NOLINT
05611     template<> struct ConwayPolynomial<607, 9> { using ZPZ = aerobus::zpz<607>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<444>, ZPZV<129>, ZPZV<604>>;
      };  // NOLINT
05612     template<> struct ConwayPolynomial<613, 1> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<611>>; };  // NOLINT
05613     template<> struct ConwayPolynomial<613, 2> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<609>, ZPZV<2>>; };  // NOLINT
05614     template<> struct ConwayPolynomial<613, 3> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<611>>; };  // NOLINT
05615     template<> struct ConwayPolynomial<613, 4> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<333>, ZPZV<2>>; };  // NOLINT
05616     template<> struct ConwayPolynomial<613, 5> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<32>, ZPZV<611>>; };  // NOLINT
05617     template<> struct ConwayPolynomial<613, 6> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<609>, ZPZV<595>, ZPZV<601>, ZPZV<2>>; };  // NOLINT
05618     template<> struct ConwayPolynomial<613, 7> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<611>>; };  // NOLINT
05619     template<> struct ConwayPolynomial<613, 8> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<489>, ZPZV<57>, ZPZV<539>, ZPZV<2>>; };  //
      NOLINT
05620     template<> struct ConwayPolynomial<613, 9> { using ZPZ = aerobus::zpz<613>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<513>, ZPZV<536>, ZPZV<611>>;
      };  // NOLINT
05621     template<> struct ConwayPolynomial<617, 1> { using ZPZ = aerobus::zpz<617>; using type =
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      POLYV<ZPZV<1>, ZPZV<614»; };  // NOLINT
05622     template<> struct ConwayPolynomial<617, 2> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<612>, ZPZV<3»; };  // NOLINT
05623     template<> struct ConwayPolynomial<617, 3> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<614»; };  // NOLINT
05624     template<> struct ConwayPolynomial<617, 4> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<503>, ZPZV<3»; };  // NOLINT
05625     template<> struct ConwayPolynomial<617, 5> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<614»; };  // NOLINT
05626     template<> struct ConwayPolynomial<617, 6> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<318>, ZPZV<595>, ZPZV<310>, ZPZV<3»; };  // NOLINT
05627     template<> struct ConwayPolynomial<617, 7> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<614»; };  // NOLINT
05628     template<> struct ConwayPolynomial<617, 8> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<519>, ZPZV<501>, ZPZV<155>, ZPZV<3»; };  //
      NOLINT
05629     template<> struct ConwayPolynomial<617, 9> { using ZPZ = aerobus::zpz<617>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<388>, ZPZV<543>, ZPZV<614»;
      };  // NOLINT
05630     template<> struct ConwayPolynomial<619, 1> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<617»; };  // NOLINT
05631     template<> struct ConwayPolynomial<619, 2> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<618>, ZPZV<2»; };  // NOLINT
05632     template<> struct ConwayPolynomial<619, 3> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<617»; };  // NOLINT
05633     template<> struct ConwayPolynomial<619, 4> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<492>, ZPZV<2»; };  // NOLINT
05634     template<> struct ConwayPolynomial<619, 5> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<617»; };  // NOLINT
05635     template<> struct ConwayPolynomial<619, 6> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<238>, ZPZV<468>, ZPZV<347>, ZPZV<2»; };  // NOLINT
05636     template<> struct ConwayPolynomial<619, 7> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<617»; };  // NOLINT
05637     template<> struct ConwayPolynomial<619, 8> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<416>, ZPZV<383>, ZPZV<225>, ZPZV<2»; };  //
      NOLINT
05638     template<> struct ConwayPolynomial<619, 9> { using ZPZ = aerobus::zpz<619>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<579>, ZPZV<310>, ZPZV<617»;
      };  // NOLINT
05639     template<> struct ConwayPolynomial<631, 1> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<628»; };  // NOLINT
05640     template<> struct ConwayPolynomial<631, 2> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<629>, ZPZV<3»; };  // NOLINT
05641     template<> struct ConwayPolynomial<631, 3> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<628»; };  // NOLINT
05642     template<> struct ConwayPolynomial<631, 4> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<376>, ZPZV<3»; };  // NOLINT
05643     template<> struct ConwayPolynomial<631, 5> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<628»; };  // NOLINT
05644     template<> struct ConwayPolynomial<631, 6> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<516>, ZPZV<541>, ZPZV<106>, ZPZV<3»; };  // NOLINT
05645     template<> struct ConwayPolynomial<631, 7> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<628»; };  // NOLINT
05646     template<> struct ConwayPolynomial<631, 8> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<379>, ZPZV<516>, ZPZV<187>, ZPZV<3»; };  //
      NOLINT
05647     template<> struct ConwayPolynomial<631, 9> { using ZPZ = aerobus::zpz<631>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<296>, ZPZV<413>, ZPZV<628»;
      };  // NOLINT
05648     template<> struct ConwayPolynomial<641, 1> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<638»; };  // NOLINT
05649     template<> struct ConwayPolynomial<641, 2> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<635>, ZPZV<3»; };  // NOLINT
05650     template<> struct ConwayPolynomial<641, 3> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<638»; };  // NOLINT
05651     template<> struct ConwayPolynomial<641, 4> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<629>, ZPZV<3»; };  // NOLINT
05652     template<> struct ConwayPolynomial<641, 5> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<638»; };  // NOLINT
05653     template<> struct ConwayPolynomial<641, 6> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<105>, ZPZV<557>, ZPZV<294>, ZPZV<3»; };  // NOLINT
05654     template<> struct ConwayPolynomial<641, 7> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<638»; };  // NOLINT
05655     template<> struct ConwayPolynomial<641, 8> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<356>, ZPZV<392>, ZPZV<332>, ZPZV<3»; };  //
      NOLINT
05656     template<> struct ConwayPolynomial<641, 9> { using ZPZ = aerobus::zpz<641>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<66>, ZPZV<141>, ZPZV<638»;
      };  // NOLINT
05657     template<> struct ConwayPolynomial<643, 1> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<632»; };  // NOLINT
05658     template<> struct ConwayPolynomial<643, 2> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<641>, ZPZV<11»; };  // NOLINT
05659     template<> struct ConwayPolynomial<643, 3> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<632»; };  // NOLINT
05660     template<> struct ConwayPolynomial<643, 4> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<600>, ZPZV<11»; };  // NOLINT
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05661     template<> struct ConwayPolynomial<643, 5> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<632»; };  // NOLINT
05662     template<> struct ConwayPolynomial<643, 6> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<345>, ZPZV<412>, ZPZV<293>, ZPZV<11»; };  // NOLINT
05663     template<> struct ConwayPolynomial<643, 7> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<632»; };  // NOLINT
05664     template<> struct ConwayPolynomial<643, 8> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<631>, ZPZV<573>, ZPZV<569>, ZPZV<11»; };  //
      NOLINT
05665     template<> struct ConwayPolynomial<643, 9> { using ZPZ = aerobus::zpz<643>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<591>, ZPZV<475>, ZPZV<632»;
      };  // NOLINT
05666     template<> struct ConwayPolynomial<647, 1> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<642»; };  // NOLINT
05667     template<> struct ConwayPolynomial<647, 2> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<645>, ZPZV<5»; };  // NOLINT
05668     template<> struct ConwayPolynomial<647, 3> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<642»; };  // NOLINT
05669     template<> struct ConwayPolynomial<647, 4> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<643>, ZPZV<5»; };  // NOLINT
05670     template<> struct ConwayPolynomial<647, 5> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<642»; };  // NOLINT
05671     template<> struct ConwayPolynomial<647, 6> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<308>, ZPZV<385>, ZPZV<642>, ZPZV<5»; };  // NOLINT
05672     template<> struct ConwayPolynomial<647, 7> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<642»; };  // NOLINT
05673     template<> struct ConwayPolynomial<647, 8> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<603>, ZPZV<259>, ZPZV<271>, ZPZV<5»; };  //
      NOLINT
05674     template<> struct ConwayPolynomial<647, 9> { using ZPZ = aerobus::zpz<647>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<561>, ZPZV<123>, ZPZV<642»;
      };  // NOLINT
05675     template<> struct ConwayPolynomial<653, 1> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<651»; };  // NOLINT
05676     template<> struct ConwayPolynomial<653, 2> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<649>, ZPZV<2»; };  // NOLINT
05677     template<> struct ConwayPolynomial<653, 3> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<651»; };  // NOLINT
05678     template<> struct ConwayPolynomial<653, 4> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<596>, ZPZV<2»; };  // NOLINT
05679     template<> struct ConwayPolynomial<653, 5> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<651»; };  // NOLINT
05680     template<> struct ConwayPolynomial<653, 6> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<45>, ZPZV<220>, ZPZV<242>, ZPZV<2»; };  // NOLINT
05681     template<> struct ConwayPolynomial<653, 7> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<651»; };  // NOLINT
05682     template<> struct ConwayPolynomial<653, 8> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<385>, ZPZV<18>, ZPZV<296>, ZPZV<2»; };  //
      NOLINT
05683     template<> struct ConwayPolynomial<653, 9> { using ZPZ = aerobus::zpz<653>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<365>, ZPZV<60>, ZPZV<651»;
      };  // NOLINT
05684     template<> struct ConwayPolynomial<659, 1> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<657»; };  // NOLINT
05685     template<> struct ConwayPolynomial<659, 2> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<655>, ZPZV<2»; };  // NOLINT
05686     template<> struct ConwayPolynomial<659, 3> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<657»; };  // NOLINT
05687     template<> struct ConwayPolynomial<659, 4> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<351>, ZPZV<2»; };  // NOLINT
05688     template<> struct ConwayPolynomial<659, 5> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<657»; };  // NOLINT
05689     template<> struct ConwayPolynomial<659, 6> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<371>, ZPZV<105>, ZPZV<223>, ZPZV<2»; };  // NOLINT
05690     template<> struct ConwayPolynomial<659, 7> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<657»; };  // NOLINT
05691     template<> struct ConwayPolynomial<659, 8> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<358>, ZPZV<246>, ZPZV<90>, ZPZV<2»; };  //
      NOLINT
05692     template<> struct ConwayPolynomial<659, 9> { using ZPZ = aerobus::zpz<659>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<592>, ZPZV<46>, ZPZV<657»;
      };  // NOLINT
05693     template<> struct ConwayPolynomial<661, 1> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<659»; };  // NOLINT
05694     template<> struct ConwayPolynomial<661, 2> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<660>, ZPZV<2»; };  // NOLINT
05695     template<> struct ConwayPolynomial<661, 3> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<659»; };  // NOLINT
05696     template<> struct ConwayPolynomial<661, 4> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<616>, ZPZV<2»; };  // NOLINT
05697     template<> struct ConwayPolynomial<661, 5> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<19>, ZPZV<659»; };  // NOLINT
05698     template<> struct ConwayPolynomial<661, 6> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<551>, ZPZV<456>, ZPZV<382>, ZPZV<2»; };  // NOLINT
05699     template<> struct ConwayPolynomial<661, 7> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<659»; };  // NOLINT
05700     template<> struct ConwayPolynomial<661, 8> { using ZPZ = aerobus::zpz<661>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<612>, ZPZV<285>, ZPZV<72>, ZPZV<2»; };  //
      NOLINT
05701     template<> struct ConwayPolynomial<661, 9> { using ZPZ = aerobus::zpz<661>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<18>, ZPZV<389>, ZPZV<220>, ZPZV<659»;
      };  // NOLINT
05702     template<> struct ConwayPolynomial<673, 1> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<668»; };  // NOLINT
05703     template<> struct ConwayPolynomial<673, 2> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<672>, ZPZV<5»; };  // NOLINT
05704     template<> struct ConwayPolynomial<673, 3> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<668»; };  // NOLINT
05705     template<> struct ConwayPolynomial<673, 4> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<416>, ZPZV<5»; };  // NOLINT
05706     template<> struct ConwayPolynomial<673, 5> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<668»; };  // NOLINT
05707     template<> struct ConwayPolynomial<673, 6> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<524>, ZPZV<248>, ZPZV<35>, ZPZV<5»; };  // NOLINT
05708     template<> struct ConwayPolynomial<673, 7> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<668»; };  // NOLINT
05709     template<> struct ConwayPolynomial<673, 8> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<669>, ZPZV<587>, ZPZV<302>, ZPZV<5»; };  //
      NOLINT
05710     template<> struct ConwayPolynomial<673, 9> { using ZPZ = aerobus::zpz<673>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<347>, ZPZV<553>, ZPZV<668»;
      };  // NOLINT
05711     template<> struct ConwayPolynomial<677, 1> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<675»; };  // NOLINT
05712     template<> struct ConwayPolynomial<677, 2> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<672>, ZPZV<2»; };  // NOLINT
05713     template<> struct ConwayPolynomial<677, 3> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<675»; };  // NOLINT
05714     template<> struct ConwayPolynomial<677, 4> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<631>, ZPZV<2»; };  // NOLINT
05715     template<> struct ConwayPolynomial<677, 5> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<675»; };  // NOLINT
05716     template<> struct ConwayPolynomial<677, 6> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<446>, ZPZV<632>, ZPZV<50>, ZPZV<2»; };  // NOLINT
05717     template<> struct ConwayPolynomial<677, 7> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<675»; };  // NOLINT
05718     template<> struct ConwayPolynomial<677, 8> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<363>, ZPZV<619>, ZPZV<152>, ZPZV<2»; };  //
      NOLINT
05719     template<> struct ConwayPolynomial<677, 9> { using ZPZ = aerobus::zpz<677>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<504>, ZPZV<404>, ZPZV<675»;
      };  // NOLINT
05720     template<> struct ConwayPolynomial<683, 1> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<678»; };  // NOLINT
05721     template<> struct ConwayPolynomial<683, 2> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<682>, ZPZV<5»; };  // NOLINT
05722     template<> struct ConwayPolynomial<683, 3> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<678»; };  // NOLINT
05723     template<> struct ConwayPolynomial<683, 4> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<455>, ZPZV<5»; };  // NOLINT
05724     template<> struct ConwayPolynomial<683, 5> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<678»; };  // NOLINT
05725     template<> struct ConwayPolynomial<683, 6> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<644>, ZPZV<109>, ZPZV<434>, ZPZV<5»; };  // NOLINT
05726     template<> struct ConwayPolynomial<683, 7> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<30>, ZPZV<678»; };  // NOLINT
05727     template<> struct ConwayPolynomial<683, 8> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<383>, ZPZV<184>, ZPZV<65>, ZPZV<5»; };  //
      NOLINT
05728     template<> struct ConwayPolynomial<683, 9> { using ZPZ = aerobus::zpz<683>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<85>, ZPZV<444>, ZPZV<678»;
      };  // NOLINT
05729     template<> struct ConwayPolynomial<691, 1> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<688»; };  // NOLINT
05730     template<> struct ConwayPolynomial<691, 2> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<686>, ZPZV<3»; };  // NOLINT
05731     template<> struct ConwayPolynomial<691, 3> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<14>, ZPZV<688»; };  // NOLINT
05732     template<> struct ConwayPolynomial<691, 4> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<632>, ZPZV<3»; };  // NOLINT
05733     template<> struct ConwayPolynomial<691, 5> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<688»; };  // NOLINT
05734     template<> struct ConwayPolynomial<691, 6> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<579>, ZPZV<408>, ZPZV<262>, ZPZV<3»; };  // NOLINT
05735     template<> struct ConwayPolynomial<691, 7> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<688»; };  // NOLINT
05736     template<> struct ConwayPolynomial<691, 8> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<356>, ZPZV<425>, ZPZV<321>, ZPZV<3»; };  //
      NOLINT
05737     template<> struct ConwayPolynomial<691, 9> { using ZPZ = aerobus::zpz<691>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<556>, ZPZV<443>, ZPZV<688»;
      };  // NOLINT
05738     template<> struct ConwayPolynomial<701, 1> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<699»; };  // NOLINT
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05739     template<> struct ConwayPolynomial<701, 2> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<697>, ZPZV<2>>; };  // NOLINT
05740     template<> struct ConwayPolynomial<701, 3> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<699>>; };  // NOLINT
05741     template<> struct ConwayPolynomial<701, 4> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<379>, ZPZV<2>>; };  // NOLINT
05742     template<> struct ConwayPolynomial<701, 5> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<699>>; };  // NOLINT
05743     template<> struct ConwayPolynomial<701, 6> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<571>, ZPZV<327>, ZPZV<285>, ZPZV<2>>; };  // NOLINT
05744     template<> struct ConwayPolynomial<701, 7> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<699>>; };  // NOLINT
05745     template<> struct ConwayPolynomial<701, 8> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<619>, ZPZV<206>, ZPZV<593>, ZPZV<2>>; };  //
      NOLINT
05746     template<> struct ConwayPolynomial<701, 9> { using ZPZ = aerobus::zpz<701>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<459>, ZPZV<373>, ZPZV<699>>;
      };  // NOLINT
05747     template<> struct ConwayPolynomial<709, 1> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<707>>; };  // NOLINT
05748     template<> struct ConwayPolynomial<709, 2> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<705>, ZPZV<2>>; };  // NOLINT
05749     template<> struct ConwayPolynomial<709, 3> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<707>>; };  // NOLINT
05750     template<> struct ConwayPolynomial<709, 4> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<384>, ZPZV<2>>; };  // NOLINT
05751     template<> struct ConwayPolynomial<709, 5> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<707>>; };  // NOLINT
05752     template<> struct ConwayPolynomial<709, 6> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<669>, ZPZV<514>, ZPZV<295>, ZPZV<2>>; };  // NOLINT
05753     template<> struct ConwayPolynomial<709, 7> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<707>>; };  // NOLINT
05754     template<> struct ConwayPolynomial<709, 8> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<689>, ZPZV<233>, ZPZV<79>, ZPZV<2>>; };  //
      NOLINT
05755     template<> struct ConwayPolynomial<709, 9> { using ZPZ = aerobus::zpz<709>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<257>, ZPZV<171>, ZPZV<707>>;
      };  // NOLINT
05756     template<> struct ConwayPolynomial<719, 1> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<708>>; };  // NOLINT
05757     template<> struct ConwayPolynomial<719, 2> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<715>, ZPZV<11>>; };  // NOLINT
05758     template<> struct ConwayPolynomial<719, 3> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<708>>; };  // NOLINT
05759     template<> struct ConwayPolynomial<719, 4> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<602>, ZPZV<11>>; };  // NOLINT
05760     template<> struct ConwayPolynomial<719, 5> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<708>>; };  // NOLINT
05761     template<> struct ConwayPolynomial<719, 6> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<533>, ZPZV<591>, ZPZV<182>, ZPZV<11>>; };  // NOLINT
05762     template<> struct ConwayPolynomial<719, 7> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<708>>; };  // NOLINT
05763     template<> struct ConwayPolynomial<719, 8> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<714>, ZPZV<362>, ZPZV<244>, ZPZV<11>>; };  //
      NOLINT
05764     template<> struct ConwayPolynomial<719, 9> { using ZPZ = aerobus::zpz<719>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<288>, ZPZV<560>, ZPZV<708>>;
      };  // NOLINT
05765     template<> struct ConwayPolynomial<727, 1> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<722>>; };  // NOLINT
05766     template<> struct ConwayPolynomial<727, 2> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<725>, ZPZV<5>>; };  // NOLINT
05767     template<> struct ConwayPolynomial<727, 3> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<722>>; };  // NOLINT
05768     template<> struct ConwayPolynomial<727, 4> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<723>, ZPZV<5>>; };  // NOLINT
05769     template<> struct ConwayPolynomial<727, 5> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<722>>; };  // NOLINT
05770     template<> struct ConwayPolynomial<727, 6> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<86>, ZPZV<397>, ZPZV<672>, ZPZV<5>>; };  // NOLINT
05771     template<> struct ConwayPolynomial<727, 7> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<17>, ZPZV<722>>; };  // NOLINT
05772     template<> struct ConwayPolynomial<727, 8> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<639>, ZPZV<671>, ZPZV<368>, ZPZV<5>>; };  //
      NOLINT
05773     template<> struct ConwayPolynomial<727, 9> { using ZPZ = aerobus::zpz<727>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<573>, ZPZV<502>, ZPZV<722>>;
      };  // NOLINT
05774     template<> struct ConwayPolynomial<733, 1> { using ZPZ = aerobus::zpz<733>; using type =
      POLYV<ZPZV<1>, ZPZV<727>>; };  // NOLINT
05775     template<> struct ConwayPolynomial<733, 2> { using ZPZ = aerobus::zpz<733>; using type =
      POLYV<ZPZV<1>, ZPZV<732>, ZPZV<6>>; };  // NOLINT
05776     template<> struct ConwayPolynomial<733, 3> { using ZPZ = aerobus::zpz<733>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<727>>; };  // NOLINT
05777     template<> struct ConwayPolynomial<733, 4> { using ZPZ = aerobus::zpz<733>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<539>, ZPZV<6>>; };  // NOLINT
05778     template<> struct ConwayPolynomial<733, 5> { using ZPZ = aerobus::zpz<733>; using type =
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    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<727»; };  // NOLINT
05779     template<> struct ConwayPolynomial<733, 6> { using ZPZ = aerobus::zpz<733>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<174>, ZPZV<549>, ZPZV<151>, ZPZV<6»; };  // NOLINT
05780     template<> struct ConwayPolynomial<733, 7> { using ZPZ = aerobus::zpz<733>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<727»; };  // NOLINT
05781     template<> struct ConwayPolynomial<733, 8> { using ZPZ = aerobus::zpz<733>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<532>, ZPZV<610>, ZPZV<142>, ZPZV<6»; };  //
    NOLINT
05782     template<> struct ConwayPolynomial<733, 9> { using ZPZ = aerobus::zpz<733>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<337>, ZPZV<6>, ZPZV<727»; };
    // NOLINT
05783     template<> struct ConwayPolynomial<739, 1> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<736»; };  // NOLINT
05784     template<> struct ConwayPolynomial<739, 2> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<734>, ZPZV<3»; };  // NOLINT
05785     template<> struct ConwayPolynomial<739, 3> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<736»; };  // NOLINT
05786     template<> struct ConwayPolynomial<739, 4> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<678>, ZPZV<3»; };  // NOLINT
05787     template<> struct ConwayPolynomial<739, 5> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<736»; };  // NOLINT
05788     template<> struct ConwayPolynomial<739, 6> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<422>, ZPZV<447>, ZPZV<625>, ZPZV<3»; };  // NOLINT
05789     template<> struct ConwayPolynomial<739, 7> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<44>, ZPZV<736»; };  // NOLINT
05790     template<> struct ConwayPolynomial<739, 8> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<401>, ZPZV<169>, ZPZV<25>, ZPZV<3»; };  //
    NOLINT
05791     template<> struct ConwayPolynomial<739, 9> { using ZPZ = aerobus::zpz<739>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<616>, ZPZV<81>, ZPZV<736»;
    };  // NOLINT
05792     template<> struct ConwayPolynomial<743, 1> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<738»; };  // NOLINT
05793     template<> struct ConwayPolynomial<743, 2> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<742>, ZPZV<5»; };  // NOLINT
05794     template<> struct ConwayPolynomial<743, 3> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<738»; };  // NOLINT
05795     template<> struct ConwayPolynomial<743, 4> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<425>, ZPZV<5»; };  // NOLINT
05796     template<> struct ConwayPolynomial<743, 5> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<738»; };  // NOLINT
05797     template<> struct ConwayPolynomial<743, 6> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<236>, ZPZV<471>, ZPZV<88>, ZPZV<5»; };  // NOLINT
05798     template<> struct ConwayPolynomial<743, 7> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<738»; };  // NOLINT
05799     template<> struct ConwayPolynomial<743, 8> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<551>, ZPZV<279>, ZPZV<588>, ZPZV<5»; };  //
    NOLINT
05800     template<> struct ConwayPolynomial<743, 9> { using ZPZ = aerobus::zpz<743>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<327>, ZPZV<676>, ZPZV<738»;
    };  // NOLINT
05801     template<> struct ConwayPolynomial<751, 1> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<748»; };  // NOLINT
05802     template<> struct ConwayPolynomial<751, 2> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<749>, ZPZV<3»; };  // NOLINT
05803     template<> struct ConwayPolynomial<751, 3> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<748»; };  // NOLINT
05804     template<> struct ConwayPolynomial<751, 4> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<525>, ZPZV<3»; };  // NOLINT
05805     template<> struct ConwayPolynomial<751, 5> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<748»; };  // NOLINT
05806     template<> struct ConwayPolynomial<751, 6> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<298>, ZPZV<633>, ZPZV<539>, ZPZV<3»; };  // NOLINT
05807     template<> struct ConwayPolynomial<751, 7> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<748»; };  // NOLINT
05808     template<> struct ConwayPolynomial<751, 8> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<741>, ZPZV<243>, ZPZV<672>, ZPZV<3»; };  //
    NOLINT
05809     template<> struct ConwayPolynomial<751, 9> { using ZPZ = aerobus::zpz<751>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<703>, ZPZV<489>, ZPZV<748»;
    };  // NOLINT
05810     template<> struct ConwayPolynomial<757, 1> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<755»; };  // NOLINT
05811     template<> struct ConwayPolynomial<757, 2> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<753>, ZPZV<2»; };  // NOLINT
05812     template<> struct ConwayPolynomial<757, 3> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<755»; };  // NOLINT
05813     template<> struct ConwayPolynomial<757, 4> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<10>, ZPZV<537>, ZPZV<2»; };  // NOLINT
05814     template<> struct ConwayPolynomial<757, 5> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<755»; };  // NOLINT
05815     template<> struct ConwayPolynomial<757, 6> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<753>, ZPZV<739>, ZPZV<745>, ZPZV<2»; };  // NOLINT
05816     template<> struct ConwayPolynomial<757, 7> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<755»; };  // NOLINT
05817     template<> struct ConwayPolynomial<757, 8> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<494>, ZPZV<110>, ZPZV<509>, ZPZV<2»; };  //
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    NOLINT
05818     template<> struct ConwayPolynomial<757, 9> { using ZPZ = aerobus::zpz<757>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<688>, ZPZV<702>, ZPZV<755»;
    };  // NOLINT
05819     template<> struct ConwayPolynomial<761, 1> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<755»; };  // NOLINT
05820     template<> struct ConwayPolynomial<761, 2> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<758>, ZPZV<6»; };  // NOLINT
05821     template<> struct ConwayPolynomial<761, 3> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<12>, ZPZV<755»; };  // NOLINT
05822     template<> struct ConwayPolynomial<761, 4> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<658>, ZPZV<6»; };  // NOLINT
05823     template<> struct ConwayPolynomial<761, 5> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<755»; };  // NOLINT
05824     template<> struct ConwayPolynomial<761, 6> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<634>, ZPZV<597>, ZPZV<155>, ZPZV<6»; };  // NOLINT
05825     template<> struct ConwayPolynomial<761, 7> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<755»; };  // NOLINT
05826     template<> struct ConwayPolynomial<761, 8> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<603>, ZPZV<144>, ZPZV<540>, ZPZV<6»; };  //
    NOLINT
05827     template<> struct ConwayPolynomial<761, 9> { using ZPZ = aerobus::zpz<761>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<317>, ZPZV<571>, ZPZV<755»;
    };  // NOLINT
05828     template<> struct ConwayPolynomial<769, 1> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<758»; };  // NOLINT
05829     template<> struct ConwayPolynomial<769, 2> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<765>, ZPZV<11»; };  // NOLINT
05830     template<> struct ConwayPolynomial<769, 3> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<758»; };  // NOLINT
05831     template<> struct ConwayPolynomial<769, 4> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<32>, ZPZV<741>, ZPZV<11»; };  // NOLINT
05832     template<> struct ConwayPolynomial<769, 5> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<758»; };  // NOLINT
05833     template<> struct ConwayPolynomial<769, 6> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<43>, ZPZV<326>, ZPZV<650>, ZPZV<11»; };  // NOLINT
05834     template<> struct ConwayPolynomial<769, 7> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<758»; };  // NOLINT
05835     template<> struct ConwayPolynomial<769, 8> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<560>, ZPZV<574>, ZPZV<632>, ZPZV<11»; };  //
    NOLINT
05836     template<> struct ConwayPolynomial<769, 9> { using ZPZ = aerobus::zpz<769>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<623>, ZPZV<751>, ZPZV<758»;
    };  // NOLINT
05837     template<> struct ConwayPolynomial<773, 1> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<771»; };  // NOLINT
05838     template<> struct ConwayPolynomial<773, 2> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<772>, ZPZV<2»; };  // NOLINT
05839     template<> struct ConwayPolynomial<773, 3> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<771»; };  // NOLINT
05840     template<> struct ConwayPolynomial<773, 4> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<444>, ZPZV<2»; };  // NOLINT
05841     template<> struct ConwayPolynomial<773, 5> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<771»; };  // NOLINT
05842     template<> struct ConwayPolynomial<773, 6> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<91>, ZPZV<3>, ZPZV<581>, ZPZV<2»; };  // NOLINT
05843     template<> struct ConwayPolynomial<773, 7> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<771»; };  // NOLINT
05844     template<> struct ConwayPolynomial<773, 8> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<484>, ZPZV<94>, ZPZV<693>, ZPZV<2»; };  //
    NOLINT
05845     template<> struct ConwayPolynomial<773, 9> { using ZPZ = aerobus::zpz<773>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<216>, ZPZV<574>, ZPZV<771»;
    };  // NOLINT
05846     template<> struct ConwayPolynomial<787, 1> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<785»; };  // NOLINT
05847     template<> struct ConwayPolynomial<787, 2> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<786>, ZPZV<2»; };  // NOLINT
05848     template<> struct ConwayPolynomial<787, 3> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<785»; };  // NOLINT
05849     template<> struct ConwayPolynomial<787, 4> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<605>, ZPZV<2»; };  // NOLINT
05850     template<> struct ConwayPolynomial<787, 5> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<785»; };  // NOLINT
05851     template<> struct ConwayPolynomial<787, 6> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<98>, ZPZV<512>, ZPZV<606>, ZPZV<2»; };  // NOLINT
05852     template<> struct ConwayPolynomial<787, 7> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<785»; };  // NOLINT
05853     template<> struct ConwayPolynomial<787, 8> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<612>, ZPZV<26>, ZPZV<715>, ZPZV<2»; };  //
    NOLINT
05854     template<> struct ConwayPolynomial<787, 9> { using ZPZ = aerobus::zpz<787>; using type =
    POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<480>, ZPZV<573>, ZPZV<785»;
    };  // NOLINT
05855     template<> struct ConwayPolynomial<797, 1> { using ZPZ = aerobus::zpz<797>; using type =
    POLYV<ZPZV<1>, ZPZV<795»; };  // NOLINT
05856     template<> struct ConwayPolynomial<797, 2> { using ZPZ = aerobus::zpz<797>; using type =
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      POLYV<ZPZV<1>, ZPZV<793>, ZPZV<2»; };  // NOLINT
05857     template<> struct ConwayPolynomial<797, 3> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<795»; };  // NOLINT
05858     template<> struct ConwayPolynomial<797, 4> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<717>, ZPZV<2»; };  // NOLINT
05859     template<> struct ConwayPolynomial<797, 5> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<795»; };  // NOLINT
05860     template<> struct ConwayPolynomial<797, 6> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<657>, ZPZV<396>, ZPZV<71>, ZPZV<2»; };  // NOLINT
05861     template<> struct ConwayPolynomial<797, 7> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<795»; };  // NOLINT
05862     template<> struct ConwayPolynomial<797, 8> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<596>, ZPZV<747>, ZPZV<389>, ZPZV<2»; };  //
      NOLINT
05863     template<> struct ConwayPolynomial<797, 9> { using ZPZ = aerobus::zpz<797>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<240>, ZPZV<599>, ZPZV<795»;
      };  // NOLINT
05864     template<> struct ConwayPolynomial<809, 1> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<806»; };  // NOLINT
05865     template<> struct ConwayPolynomial<809, 2> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<799>, ZPZV<3»; };  // NOLINT
05866     template<> struct ConwayPolynomial<809, 3> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<806»; };  // NOLINT
05867     template<> struct ConwayPolynomial<809, 4> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<644>, ZPZV<3»; };  // NOLINT
05868     template<> struct ConwayPolynomial<809, 5> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<806»; };  // NOLINT
05869     template<> struct ConwayPolynomial<809, 6> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<562>, ZPZV<75>, ZPZV<43>, ZPZV<3»; };  // NOLINT
05870     template<> struct ConwayPolynomial<809, 7> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<806»; };  // NOLINT
05871     template<> struct ConwayPolynomial<809, 8> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<593>, ZPZV<745>, ZPZV<673>, ZPZV<3»; };  //
      NOLINT
05872     template<> struct ConwayPolynomial<809, 9> { using ZPZ = aerobus::zpz<809>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<341>, ZPZV<727>, ZPZV<806»;
      };  // NOLINT
05873     template<> struct ConwayPolynomial<811, 1> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<808»; };  // NOLINT
05874     template<> struct ConwayPolynomial<811, 2> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<806>, ZPZV<3»; };  // NOLINT
05875     template<> struct ConwayPolynomial<811, 3> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<808»; };  // NOLINT
05876     template<> struct ConwayPolynomial<811, 4> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<453>, ZPZV<3»; };  // NOLINT
05877     template<> struct ConwayPolynomial<811, 5> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<808»; };  // NOLINT
05878     template<> struct ConwayPolynomial<811, 6> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<780>, ZPZV<755>, ZPZV<307>, ZPZV<3»; };  // NOLINT
05879     template<> struct ConwayPolynomial<811, 7> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<808»; };  // NOLINT
05880     template<> struct ConwayPolynomial<811, 8> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<663>, ZPZV<806>, ZPZV<525>, ZPZV<3»; };  //
      NOLINT
05881     template<> struct ConwayPolynomial<811, 9> { using ZPZ = aerobus::zpz<811>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<382>, ZPZV<200>, ZPZV<808»;
      };  // NOLINT
05882     template<> struct ConwayPolynomial<821, 1> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<819»; };  // NOLINT
05883     template<> struct ConwayPolynomial<821, 2> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<816>, ZPZV<2»; };  // NOLINT
05884     template<> struct ConwayPolynomial<821, 3> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<819»; };  // NOLINT
05885     template<> struct ConwayPolynomial<821, 4> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<15>, ZPZV<662>, ZPZV<2»; };  // NOLINT
05886     template<> struct ConwayPolynomial<821, 5> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<819»; };  // NOLINT
05887     template<> struct ConwayPolynomial<821, 6> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<160>, ZPZV<130>, ZPZV<803>, ZPZV<2»; };  // NOLINT
05888     template<> struct ConwayPolynomial<821, 7> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<819»; };  // NOLINT
05889     template<> struct ConwayPolynomial<821, 8> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<626>, ZPZV<556>, ZPZV<589>, ZPZV<2»; };  //
      NOLINT
05890     template<> struct ConwayPolynomial<821, 9> { using ZPZ = aerobus::zpz<821>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<650>, ZPZV<557>, ZPZV<819»;
      };  // NOLINT
05891     template<> struct ConwayPolynomial<823, 1> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<820»; };  // NOLINT
05892     template<> struct ConwayPolynomial<823, 2> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<821>, ZPZV<3»; };  // NOLINT
05893     template<> struct ConwayPolynomial<823, 3> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<820»; };  // NOLINT
05894     template<> struct ConwayPolynomial<823, 4> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<819>, ZPZV<3»; };  // NOLINT
05895     template<> struct ConwayPolynomial<823, 5> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<820»; };  // NOLINT
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05896     template<> struct ConwayPolynomial<823, 6> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<822>, ZPZV<616>, ZPZV<744>, ZPZV<3>>; };  // NOLINT
05897     template<> struct ConwayPolynomial<823, 7> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<820>>; };  // NOLINT
05898     template<> struct ConwayPolynomial<823, 8> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<451>, ZPZV<437>, ZPZV<31>, ZPZV<3>>; };  //
      NOLINT
05899     template<> struct ConwayPolynomial<823, 9> { using ZPZ = aerobus::zpz<823>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<740>, ZPZV<609>, ZPZV<820>>;
      };  // NOLINT
05900     template<> struct ConwayPolynomial<827, 1> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<825>>; };  // NOLINT
05901     template<> struct ConwayPolynomial<827, 2> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<821>, ZPZV<2>>; };  // NOLINT
05902     template<> struct ConwayPolynomial<827, 3> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<825>>; };  // NOLINT
05903     template<> struct ConwayPolynomial<827, 4> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<18>, ZPZV<605>, ZPZV<2>>; };  // NOLINT
05904     template<> struct ConwayPolynomial<827, 5> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<825>>; };  // NOLINT
05905     template<> struct ConwayPolynomial<827, 6> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<685>, ZPZV<601>, ZPZV<691>, ZPZV<2>>; };  // NOLINT
05906     template<> struct ConwayPolynomial<827, 7> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<825>>; };  // NOLINT
05907     template<> struct ConwayPolynomial<827, 8> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<812>, ZPZV<79>, ZPZV<32>, ZPZV<2>>; };  //
      NOLINT
05908     template<> struct ConwayPolynomial<827, 9> { using ZPZ = aerobus::zpz<827>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<177>, ZPZV<372>, ZPZV<825>>;
      };  // NOLINT
05909     template<> struct ConwayPolynomial<829, 1> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<827>>; };  // NOLINT
05910     template<> struct ConwayPolynomial<829, 2> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<828>, ZPZV<2>>; };  // NOLINT
05911     template<> struct ConwayPolynomial<829, 3> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<827>>; };  // NOLINT
05912     template<> struct ConwayPolynomial<829, 4> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<9>, ZPZV<604>, ZPZV<2>>; };  // NOLINT
05913     template<> struct ConwayPolynomial<829, 5> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<827>>; };  // NOLINT
05914     template<> struct ConwayPolynomial<829, 6> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<341>, ZPZV<476>, ZPZV<817>, ZPZV<2>>; };  // NOLINT
05915     template<> struct ConwayPolynomial<829, 7> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<827>>; };  // NOLINT
05916     template<> struct ConwayPolynomial<829, 8> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<468>, ZPZV<241>, ZPZV<138>, ZPZV<2>>; };  //
      NOLINT
05917     template<> struct ConwayPolynomial<829, 9> { using ZPZ = aerobus::zpz<829>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<621>, ZPZV<552>, ZPZV<827>>;
      };  // NOLINT
05918     template<> struct ConwayPolynomial<839, 1> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<828>>; };  // NOLINT
05919     template<> struct ConwayPolynomial<839, 2> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<838>, ZPZV<11>>; };  // NOLINT
05920     template<> struct ConwayPolynomial<839, 3> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<828>>; };  // NOLINT
05921     template<> struct ConwayPolynomial<839, 4> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<609>, ZPZV<11>>; };  // NOLINT
05922     template<> struct ConwayPolynomial<839, 5> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<828>>; };  // NOLINT
05923     template<> struct ConwayPolynomial<839, 6> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<370>, ZPZV<537>, ZPZV<23>, ZPZV<11>>; };  // NOLINT
05924     template<> struct ConwayPolynomial<839, 7> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<828>>; };  // NOLINT
05925     template<> struct ConwayPolynomial<839, 8> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<16>, ZPZV<553>, ZPZV<779>, ZPZV<329>, ZPZV<11>>; };  //
      NOLINT
05926     template<> struct ConwayPolynomial<839, 9> { using ZPZ = aerobus::zpz<839>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<349>, ZPZV<206>, ZPZV<828>>;
      };  // NOLINT
05927     template<> struct ConwayPolynomial<853, 1> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<851>>; };  // NOLINT
05928     template<> struct ConwayPolynomial<853, 2> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<852>, ZPZV<2>>; };  // NOLINT
05929     template<> struct ConwayPolynomial<853, 3> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<851>>; };  // NOLINT
05930     template<> struct ConwayPolynomial<853, 4> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<623>, ZPZV<2>>; };  // NOLINT
05931     template<> struct ConwayPolynomial<853, 5> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<851>>; };  // NOLINT
05932     template<> struct ConwayPolynomial<853, 6> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<276>, ZPZV<194>, ZPZV<512>, ZPZV<2>>; };  // NOLINT
05933     template<> struct ConwayPolynomial<853, 7> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<851>>; };  // NOLINT
05934     template<> struct ConwayPolynomial<853, 8> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<544>, ZPZV<846>, ZPZV<118>, ZPZV<2>>; };  //
      NOLINT
```

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05935     template<> struct ConwayPolynomial<853, 9> { using ZPZ = aerobus::zpz<853>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<677>, ZPZV<821>, ZPZV<851»;
      };  // NOLINT
05936     template<> struct ConwayPolynomial<857, 1> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<854»; };  // NOLINT
05937     template<> struct ConwayPolynomial<857, 2> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<850>, ZPZV<3»; };  // NOLINT
05938     template<> struct ConwayPolynomial<857, 3> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<854»; };  // NOLINT
05939     template<> struct ConwayPolynomial<857, 4> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<528>, ZPZV<3»; };  // NOLINT
05940     template<> struct ConwayPolynomial<857, 5> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<854»; };  // NOLINT
05941     template<> struct ConwayPolynomial<857, 6> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<32>, ZPZV<824>, ZPZV<65>, ZPZV<3»; };  // NOLINT
05942     template<> struct ConwayPolynomial<857, 7> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<854»; };  // NOLINT
05943     template<> struct ConwayPolynomial<857, 8> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<611>, ZPZV<552>, ZPZV<494>, ZPZV<3»; };  //
      NOLINT
05944     template<> struct ConwayPolynomial<857, 9> { using ZPZ = aerobus::zpz<857>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<308>, ZPZV<719>, ZPZV<854»;
      };  // NOLINT
05945     template<> struct ConwayPolynomial<859, 1> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<857»; };  // NOLINT
05946     template<> struct ConwayPolynomial<859, 2> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<858>, ZPZV<2»; };  // NOLINT
05947     template<> struct ConwayPolynomial<859, 3> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<857»; };  // NOLINT
05948     template<> struct ConwayPolynomial<859, 4> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<530>, ZPZV<2»; };  // NOLINT
05949     template<> struct ConwayPolynomial<859, 5> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<12>, ZPZV<857»; };  // NOLINT
05950     template<> struct ConwayPolynomial<859, 6> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<419>, ZPZV<646>, ZPZV<566>, ZPZV<2»; };  // NOLINT
05951     template<> struct ConwayPolynomial<859, 7> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<857»; };  // NOLINT
05952     template<> struct ConwayPolynomial<859, 8> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<522>, ZPZV<446>, ZPZV<672>, ZPZV<2»; };  //
      NOLINT
05953     template<> struct ConwayPolynomial<859, 9> { using ZPZ = aerobus::zpz<859>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<648>, ZPZV<845>, ZPZV<857»;
      };  // NOLINT
05954     template<> struct ConwayPolynomial<863, 1> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<858»; };  // NOLINT
05955     template<> struct ConwayPolynomial<863, 2> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<862>, ZPZV<5»; };  // NOLINT
05956     template<> struct ConwayPolynomial<863, 3> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<858»; };  // NOLINT
05957     template<> struct ConwayPolynomial<863, 4> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<770>, ZPZV<5»; };  // NOLINT
05958     template<> struct ConwayPolynomial<863, 5> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<858»; };  // NOLINT
05959     template<> struct ConwayPolynomial<863, 6> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<330>, ZPZV<62>, ZPZV<300>, ZPZV<5»; };  // NOLINT
05960     template<> struct ConwayPolynomial<863, 7> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<858»; };  // NOLINT
05961     template<> struct ConwayPolynomial<863, 8> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<765>, ZPZV<576>, ZPZV<849>, ZPZV<5»; };  //
      NOLINT
05962     template<> struct ConwayPolynomial<863, 9> { using ZPZ = aerobus::zpz<863>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<381>, ZPZV<1>, ZPZV<858»; };
      // NOLINT
05963     template<> struct ConwayPolynomial<877, 1> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<875»; };  // NOLINT
05964     template<> struct ConwayPolynomial<877, 2> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<873>, ZPZV<2»; };  // NOLINT
05965     template<> struct ConwayPolynomial<877, 3> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<875»; };  // NOLINT
05966     template<> struct ConwayPolynomial<877, 4> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<604>, ZPZV<2»; };  // NOLINT
05967     template<> struct ConwayPolynomial<877, 5> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<875»; };  // NOLINT
05968     template<> struct ConwayPolynomial<877, 6> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<629>, ZPZV<400>, ZPZV<855>, ZPZV<2»; };  // NOLINT
05969     template<> struct ConwayPolynomial<877, 7> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<875»; };  // NOLINT
05970     template<> struct ConwayPolynomial<877, 8> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<767>, ZPZV<319>, ZPZV<347>, ZPZV<2»; };  //
      NOLINT
05971     template<> struct ConwayPolynomial<877, 9> { using ZPZ = aerobus::zpz<877>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<770>, ZPZV<278>, ZPZV<875»;
      };  // NOLINT
05972     template<> struct ConwayPolynomial<881, 1> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<878»; };  // NOLINT
05973     template<> struct ConwayPolynomial<881, 2> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<869>, ZPZV<3»; };  // NOLINT
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05974     template<> struct ConwayPolynomial<881, 3> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<878»; };  // NOLINT
05975     template<> struct ConwayPolynomial<881, 4> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<447>, ZPZV<3»; };  // NOLINT
05976     template<> struct ConwayPolynomial<881, 5> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<878»; };  // NOLINT
05977     template<> struct ConwayPolynomial<881, 6> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<218>, ZPZV<419>, ZPZV<231>, ZPZV<3»; };  // NOLINT
05978     template<> struct ConwayPolynomial<881, 7> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<878»; };  // NOLINT
05979     template<> struct ConwayPolynomial<881, 8> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<21>, ZPZV<635>, ZPZV<490>, ZPZV<561>, ZPZV<3»; };  //
      NOLINT
05980     template<> struct ConwayPolynomial<881, 9> { using ZPZ = aerobus::zpz<881>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<587>, ZPZV<510>, ZPZV<878»;
      };  // NOLINT
05981     template<> struct ConwayPolynomial<883, 1> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<881»; };  // NOLINT
05982     template<> struct ConwayPolynomial<883, 2> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<879>, ZPZV<2»; };  // NOLINT
05983     template<> struct ConwayPolynomial<883, 3> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<6>, ZPZV<881»; };  // NOLINT
05984     template<> struct ConwayPolynomial<883, 4> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<715>, ZPZV<2»; };  // NOLINT
05985     template<> struct ConwayPolynomial<883, 5> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<881»; };  // NOLINT
05986     template<> struct ConwayPolynomial<883, 6> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<879>, ZPZV<865>, ZPZV<871>, ZPZV<2»; };  // NOLINT
05987     template<> struct ConwayPolynomial<883, 7> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<881»; };  // NOLINT
05988     template<> struct ConwayPolynomial<883, 8> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<740>, ZPZV<762>, ZPZV<768>, ZPZV<2»; };  //
      NOLINT
05989     template<> struct ConwayPolynomial<883, 9> { using ZPZ = aerobus::zpz<883>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<360>, ZPZV<557>, ZPZV<881»;
      };  // NOLINT
05990     template<> struct ConwayPolynomial<887, 1> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<882»; };  // NOLINT
05991     template<> struct ConwayPolynomial<887, 2> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<885>, ZPZV<5»; };  // NOLINT
05992     template<> struct ConwayPolynomial<887, 3> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<882»; };  // NOLINT
05993     template<> struct ConwayPolynomial<887, 4> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<883>, ZPZV<5»; };  // NOLINT
05994     template<> struct ConwayPolynomial<887, 5> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<882»; };  // NOLINT
05995     template<> struct ConwayPolynomial<887, 6> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<775>, ZPZV<341>, ZPZV<28>, ZPZV<5»; };  // NOLINT
05996     template<> struct ConwayPolynomial<887, 7> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<882»; };  // NOLINT
05997     template<> struct ConwayPolynomial<887, 8> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<781>, ZPZV<381>, ZPZV<706>, ZPZV<5»; };  //
      NOLINT
05998     template<> struct ConwayPolynomial<887, 9> { using ZPZ = aerobus::zpz<887>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<727>, ZPZV<345>, ZPZV<882»;
      };  // NOLINT
05999     template<> struct ConwayPolynomial<907, 1> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<905»; };  // NOLINT
06000     template<> struct ConwayPolynomial<907, 2> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<903>, ZPZV<2»; };  // NOLINT
06001     template<> struct ConwayPolynomial<907, 3> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<905»; };  // NOLINT
06002     template<> struct ConwayPolynomial<907, 4> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<14>, ZPZV<478>, ZPZV<2»; };  // NOLINT
06003     template<> struct ConwayPolynomial<907, 5> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<905»; };  // NOLINT
06004     template<> struct ConwayPolynomial<907, 6> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<626>, ZPZV<752>, ZPZV<266>, ZPZV<2»; };  // NOLINT
06005     template<> struct ConwayPolynomial<907, 7> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<905»; };  // NOLINT
06006     template<> struct ConwayPolynomial<907, 8> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<584>, ZPZV<518>, ZPZV<811>, ZPZV<2»; };  //
      NOLINT
06007     template<> struct ConwayPolynomial<907, 9> { using ZPZ = aerobus::zpz<907>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<783>, ZPZV<57>, ZPZV<905»;
      };  // NOLINT
06008     template<> struct ConwayPolynomial<911, 1> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<894»; };  // NOLINT
06009     template<> struct ConwayPolynomial<911, 2> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<909>, ZPZV<17»; };  // NOLINT
06010     template<> struct ConwayPolynomial<911, 3> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<894»; };  // NOLINT
06011     template<> struct ConwayPolynomial<911, 4> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<11>, ZPZV<887>, ZPZV<17»; };  // NOLINT
06012     template<> struct ConwayPolynomial<911, 5> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<894»; };  // NOLINT
06013     template<> struct ConwayPolynomial<911, 6> { using ZPZ = aerobus::zpz<911>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<172>, ZPZV<683>, ZPZV<19>, ZPZV<17»; };  // NOLINT
06014     template<> struct ConwayPolynomial<911, 7> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<894»; };  // NOLINT
06015     template<> struct ConwayPolynomial<911, 8> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<708>, ZPZV<590>, ZPZV<168>, ZPZV<17»; };  //
      NOLINT
06016     template<> struct ConwayPolynomial<911, 9> { using ZPZ = aerobus::zpz<911>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<679>, ZPZV<116>, ZPZV<894»;
      };  // NOLINT
06017     template<> struct ConwayPolynomial<919, 1> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<912»; };  // NOLINT
06018     template<> struct ConwayPolynomial<919, 2> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<910>, ZPZV<7»; };  // NOLINT
06019     template<> struct ConwayPolynomial<919, 3> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<912»; };  // NOLINT
06020     template<> struct ConwayPolynomial<919, 4> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<602>, ZPZV<7»; };  // NOLINT
06021     template<> struct ConwayPolynomial<919, 5> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<912»; };  // NOLINT
06022     template<> struct ConwayPolynomial<919, 6> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<312>, ZPZV<817>, ZPZV<113>, ZPZV<7»; };  // NOLINT
06023     template<> struct ConwayPolynomial<919, 7> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<912»; };  // NOLINT
06024     template<> struct ConwayPolynomial<919, 8> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<708>, ZPZV<202>, ZPZV<504>, ZPZV<7»; };  //
      NOLINT
06025     template<> struct ConwayPolynomial<919, 9> { using ZPZ = aerobus::zpz<919>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<410>, ZPZV<623>, ZPZV<912»;
      };  // NOLINT
06026     template<> struct ConwayPolynomial<929, 1> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<926»; };  // NOLINT
06027     template<> struct ConwayPolynomial<929, 2> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<917>, ZPZV<3»; };  // NOLINT
06028     template<> struct ConwayPolynomial<929, 3> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<926»; };  // NOLINT
06029     template<> struct ConwayPolynomial<929, 4> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<787>, ZPZV<3»; };  // NOLINT
06030     template<> struct ConwayPolynomial<929, 5> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<926»; };  // NOLINT
06031     template<> struct ConwayPolynomial<929, 6> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<805>, ZPZV<92>, ZPZV<86>, ZPZV<3»; };  // NOLINT
06032     template<> struct ConwayPolynomial<929, 7> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<926»; };  // NOLINT
06033     template<> struct ConwayPolynomial<929, 8> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<699>, ZPZV<292>, ZPZV<586>, ZPZV<3»; };  //
      NOLINT
06034     template<> struct ConwayPolynomial<929, 9> { using ZPZ = aerobus::zpz<929>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<481>, ZPZV<199>, ZPZV<926»;
      };  // NOLINT
06035     template<> struct ConwayPolynomial<937, 1> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<932»; };  // NOLINT
06036     template<> struct ConwayPolynomial<937, 2> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<934>, ZPZV<5»; };  // NOLINT
06037     template<> struct ConwayPolynomial<937, 3> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<932»; };  // NOLINT
06038     template<> struct ConwayPolynomial<937, 4> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<23>, ZPZV<585>, ZPZV<5»; };  // NOLINT
06039     template<> struct ConwayPolynomial<937, 5> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<932»; };  // NOLINT
06040     template<> struct ConwayPolynomial<937, 6> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<794>, ZPZV<727>, ZPZV<934>, ZPZV<5»; };  // NOLINT
06041     template<> struct ConwayPolynomial<937, 7> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<24>, ZPZV<932»; };  // NOLINT
06042     template<> struct ConwayPolynomial<937, 8> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<658>, ZPZV<26>, ZPZV<53>, ZPZV<5»; };  //
      NOLINT
06043     template<> struct ConwayPolynomial<937, 9> { using ZPZ = aerobus::zpz<937>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<28>, ZPZV<533>, ZPZV<483>, ZPZV<932»;
      };  // NOLINT
06044     template<> struct ConwayPolynomial<941, 1> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<939»; };  // NOLINT
06045     template<> struct ConwayPolynomial<941, 2> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<940>, ZPZV<2»; };  // NOLINT
06046     template<> struct ConwayPolynomial<941, 3> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<939»; };  // NOLINT
06047     template<> struct ConwayPolynomial<941, 4> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<505>, ZPZV<2»; };  // NOLINT
06048     template<> struct ConwayPolynomial<941, 5> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<939»; };  // NOLINT
06049     template<> struct ConwayPolynomial<941, 6> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<459>, ZPZV<694>, ZPZV<538>, ZPZV<2»; };  // NOLINT
06050     template<> struct ConwayPolynomial<941, 7> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<4>, ZPZV<939»; };  // NOLINT
06051     template<> struct ConwayPolynomial<941, 8> { using ZPZ = aerobus::zpz<941>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<805>, ZPZV<675>, ZPZV<590>, ZPZV<2»; };  //
      NOLINT
06052     template<> struct ConwayPolynomial<941, 9> { using ZPZ = aerobus::zpz<941>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<708>, ZPZV<197>, ZPZV<939»;
      };  // NOLINT
06053     template<> struct ConwayPolynomial<947, 1> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<945»; };  // NOLINT
06054     template<> struct ConwayPolynomial<947, 2> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<943>, ZPZV<2»; };  // NOLINT
06055     template<> struct ConwayPolynomial<947, 3> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<945»; };  // NOLINT
06056     template<> struct ConwayPolynomial<947, 4> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<8>, ZPZV<894>, ZPZV<2»; };  // NOLINT
06057     template<> struct ConwayPolynomial<947, 5> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<945»; };  // NOLINT
06058     template<> struct ConwayPolynomial<947, 6> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<880>, ZPZV<787>, ZPZV<95>, ZPZV<2»; };  // NOLINT
06059     template<> struct ConwayPolynomial<947, 7> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<945»; };  // NOLINT
06060     template<> struct ConwayPolynomial<947, 8> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<845>, ZPZV<597>, ZPZV<581>, ZPZV<2»; };  //
      NOLINT
06061     template<> struct ConwayPolynomial<947, 9> { using ZPZ = aerobus::zpz<947>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<269>, ZPZV<808>, ZPZV<945»;
      };  // NOLINT
06062     template<> struct ConwayPolynomial<953, 1> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<950»; };  // NOLINT
06063     template<> struct ConwayPolynomial<953, 2> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<947>, ZPZV<3»; };  // NOLINT
06064     template<> struct ConwayPolynomial<953, 3> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<7>, ZPZV<950»; };  // NOLINT
06065     template<> struct ConwayPolynomial<953, 4> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<865>, ZPZV<3»; };  // NOLINT
06066     template<> struct ConwayPolynomial<953, 5> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<950»; };  // NOLINT
06067     template<> struct ConwayPolynomial<953, 6> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<507>, ZPZV<829>, ZPZV<730>, ZPZV<3»; };  // NOLINT
06068     template<> struct ConwayPolynomial<953, 7> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<5>, ZPZV<950»; };  // NOLINT
06069     template<> struct ConwayPolynomial<953, 8> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<6>, ZPZV<579>, ZPZV<658>, ZPZV<108>, ZPZV<3»; };  //
      NOLINT
06070     template<> struct ConwayPolynomial<953, 9> { using ZPZ = aerobus::zpz<953>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<819>, ZPZV<316>, ZPZV<950»;
      };  // NOLINT
06071     template<> struct ConwayPolynomial<967, 1> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<962»; };  // NOLINT
06072     template<> struct ConwayPolynomial<967, 2> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<965>, ZPZV<5»; };  // NOLINT
06073     template<> struct ConwayPolynomial<967, 3> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<962»; };  // NOLINT
06074     template<> struct ConwayPolynomial<967, 4> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<963>, ZPZV<5»; };  // NOLINT
06075     template<> struct ConwayPolynomial<967, 5> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<2>, ZPZV<962»; };  // NOLINT
06076     template<> struct ConwayPolynomial<967, 6> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<805>, ZPZV<948>, ZPZV<831>, ZPZV<5»; };  // NOLINT
06077     template<> struct ConwayPolynomial<967, 7> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<962»; };  // NOLINT
06078     template<> struct ConwayPolynomial<967, 8> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<840>, ZPZV<502>, ZPZV<136>, ZPZV<5»; };  //
      NOLINT
06079     template<> struct ConwayPolynomial<967, 9> { using ZPZ = aerobus::zpz<967>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<512>, ZPZV<783>, ZPZV<962»;
      };  // NOLINT
06080     template<> struct ConwayPolynomial<971, 1> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<965»; };  // NOLINT
06081     template<> struct ConwayPolynomial<971, 2> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<970>, ZPZV<6»; };  // NOLINT
06082     template<> struct ConwayPolynomial<971, 3> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<3>, ZPZV<965»; };  // NOLINT
06083     template<> struct ConwayPolynomial<971, 4> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<527>, ZPZV<6»; };  // NOLINT
06084     template<> struct ConwayPolynomial<971, 5> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<14>, ZPZV<965»; };  // NOLINT
06085     template<> struct ConwayPolynomial<971, 6> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<970>, ZPZV<729>, ZPZV<718>, ZPZV<6»; };  // NOLINT
06086     template<> struct ConwayPolynomial<971, 7> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<13>, ZPZV<965»; };  // NOLINT
06087     template<> struct ConwayPolynomial<971, 8> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<725>, ZPZV<281>, ZPZV<206>, ZPZV<6»; };  //
      NOLINT
06088     template<> struct ConwayPolynomial<971, 9> { using ZPZ = aerobus::zpz<971>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<805>, ZPZV<473>, ZPZV<965»;
      };  // NOLINT
06089     template<> struct ConwayPolynomial<977, 1> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<974»; };  // NOLINT
06090     template<> struct ConwayPolynomial<977, 2> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<972>, ZPZV<3»; };  // NOLINT
06091     template<> struct ConwayPolynomial<977, 3> { using ZPZ = aerobus::zpz<977>; using type =
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      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<974»; };  // NOLINT
06092     template<> struct ConwayPolynomial<977, 4> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<800>, ZPZV<3»; };  // NOLINT
06093     template<> struct ConwayPolynomial<977, 5> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<11>, ZPZV<974»; };  // NOLINT
06094     template<> struct ConwayPolynomial<977, 6> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<729>, ZPZV<830>, ZPZV<753>, ZPZV<3»; };  // NOLINT
06095     template<> struct ConwayPolynomial<977, 7> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<974»; };  // NOLINT
06096     template<> struct ConwayPolynomial<977, 8> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<855>, ZPZV<807>, ZPZV<77>, ZPZV<3»; };  //
      NOLINT
06097     template<> struct ConwayPolynomial<977, 9> { using ZPZ = aerobus::zpz<977>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<450>, ZPZV<740>, ZPZV<974»;
      };  // NOLINT
06098     template<> struct ConwayPolynomial<983, 1> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<978»; };  // NOLINT
06099     template<> struct ConwayPolynomial<983, 2> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<981>, ZPZV<5»; };  // NOLINT
06100     template<> struct ConwayPolynomial<983, 3> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<1>, ZPZV<978»; };  // NOLINT
06101     template<> struct ConwayPolynomial<983, 4> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<5>, ZPZV<567>, ZPZV<5»; };  // NOLINT
06102     template<> struct ConwayPolynomial<983, 5> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<8>, ZPZV<978»; };  // NOLINT
06103     template<> struct ConwayPolynomial<983, 6> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<849>, ZPZV<296>, ZPZV<228>, ZPZV<5»; };  // NOLINT
06104     template<> struct ConwayPolynomial<983, 7> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<978»; };  // NOLINT
06105     template<> struct ConwayPolynomial<983, 8> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<738>, ZPZV<276>, ZPZV<530>, ZPZV<5»; };  //
      NOLINT
06106     template<> struct ConwayPolynomial<983, 9> { using ZPZ = aerobus::zpz<983>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<858>, ZPZV<87>, ZPZV<978»;
      };  // NOLINT
06107     template<> struct ConwayPolynomial<991, 1> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<985»; };  // NOLINT
06108     template<> struct ConwayPolynomial<991, 2> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<989>, ZPZV<6»; };  // NOLINT
06109     template<> struct ConwayPolynomial<991, 3> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<985»; };  // NOLINT
06110     template<> struct ConwayPolynomial<991, 4> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<10>, ZPZV<794>, ZPZV<6»; };  // NOLINT
06111     template<> struct ConwayPolynomial<991, 5> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<3>, ZPZV<985»; };  // NOLINT
06112     template<> struct ConwayPolynomial<991, 6> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<637>, ZPZV<855>, ZPZV<278>, ZPZV<6»; };  // NOLINT
06113     template<> struct ConwayPolynomial<991, 7> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<7>, ZPZV<985»; };  // NOLINT
06114     template<> struct ConwayPolynomial<991, 8> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<15>, ZPZV<941>, ZPZV<786>, ZPZV<234>, ZPZV<6»; };  //
      NOLINT
06115     template<> struct ConwayPolynomial<991, 9> { using ZPZ = aerobus::zpz<991>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<9>, ZPZV<466>, ZPZV<222>, ZPZV<985»;
      };  // NOLINT
06116     template<> struct ConwayPolynomial<997, 1> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<990»; };  // NOLINT
06117     template<> struct ConwayPolynomial<997, 2> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<995>, ZPZV<7»; };  // NOLINT
06118     template<> struct ConwayPolynomial<997, 3> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<2>, ZPZV<990»; };  // NOLINT
06119     template<> struct ConwayPolynomial<997, 4> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<4>, ZPZV<622>, ZPZV<7»; };  // NOLINT
06120     template<> struct ConwayPolynomial<997, 5> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<10>, ZPZV<990»; };  // NOLINT
06121     template<> struct ConwayPolynomial<997, 6> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<981>, ZPZV<58>, ZPZV<260>, ZPZV<7»; };  // NOLINT
06122     template<> struct ConwayPolynomial<997, 7> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<1>, ZPZV<990»; };  // NOLINT
06123     template<> struct ConwayPolynomial<997, 8> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<934>, ZPZV<473>, ZPZV<241>, ZPZV<7»; };  //
      NOLINT
06124     template<> struct ConwayPolynomial<997, 9> { using ZPZ = aerobus::zpz<997>; using type =
      POLYV<ZPZV<1>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<0>, ZPZV<39>, ZPZV<732>, ZPZV<616>, ZPZV<990»;
      };  // NOLINT
06125 #endif  // DO_NOT_DOCUMENT
06126 }  // namespace aerobus
06127 #endif  // AEROBUS_CONWAY_IMPORTS
06128
06129 #endif // __INC_AEROBUS__ // NOLINT
```

9.4 src/examples.h File Reference

9.5 examples.h

Go to the documentation of this file.

```
00001 #ifndef SRC_EXAMPLES_H_
00002 #define SRC_EXAMPLES_H_
00050 #endif  // SRC_EXAMPLES_H_
```

Chapter 10

Examples

10.1 examples/hermite.cpp

How to use aerobus::known_polynomials::hermite_phys polynomials

```
#include <cmath>
#include <iostream>
#include "../src/aerobus.h"

namespace standardlib {
    double H3(double x) {
        return 8 * std::pow(x, 3) - 12 * x;
    }

    double H4(double x) {
        return 16 * std::pow(x, 4) - 48 * x * x + 12;
    }
}

namespace aerobuslib {
    double H3(double x) {
        return 8 * aerobus::pow_scalar<double, 3>(x) - 12 * x;
    }

    double H4(double x) {
        return 16 * aerobus::pow_scalar<double, 4>(x) - 48 * x * x + 12;
    }
}

int main() {
    std::cout << std::hermite(3, 10) << '=' << standardlib::H3(10) << '\n'
              << std::hermite(4, 10) << '=' << standardlib::H4(10) << '\n';
    std::cout << aerobus::known_polynomials::hermite_phys<3>::eval(10) << '=' << aerobuslib::H3(10) << '\n'
              << aerobus::known_polynomials::hermite_phys<4>::eval(10) << '=' << aerobuslib::H4(10) << '\n';
}
```

10.2 examples/custom_taylor.cpp

How to implement your own Taylor serie using aerobus::taylor

```
#include <cmath>
#include <iostream>
#include <iomanip>
#include "../src/aerobus.h"


template<typename T, size_t i>
struct my_coeff {
    using type = aerobus::makefraction_t<T, aerobus::bell_t<T, i>, aerobus::factorial_t<T, i>>;
};

template<size_t deg>
```

```
using F = aerobus::taylor<aerobus::i64, my_coeff, deg>;

int main() {
    constexpr double x = F<15>::eval(0.1);
    double xx = std::exp(std::exp(0.1) - 1);
    std::cout « std::setprecision(18) « x « " == " « xx « std::endl;
}
```

10.3 examples/fp16.cu

How to leverage CUDA __half and __half2 16 bits floating points number using aerobus::i16 Warning : due to an NVIDIA bug (lack of constexpr operators), performance is not good

```
// TO compile with nvcc -O3 -std=c++20 -arch=sm_90 fp16.cu
// TO GET optimal performances, modify cuda_fp16.h by adding __CUDA_FP16_CONSTEXPR__ to line 5039 (version
      12.6)
#include <cstdio>

#define WITH_CUDA_FP16
#include "../src/aerobus.h"

/*
change int_type to aerobus::i32 (or i64) and float_type to float (resp. double)
to see how good is the generated assembly compared to what nvcc generates for 16 bits
*/
using int_type = aerobus::i16;
using float_type = __half2;


constexpr size_t N = 1 « 24;

template<typename T>
struct Expm1Degree;

template<>
struct Expm1Degree<double> {
    static constexpr size_t val = 18;
};

template<>
struct Expm1Degree<float> {
    static constexpr size_t val = 11;
};

template<>
struct Expm1Degree<__half2> {
    static constexpr size_t val = 6;
};

template<>
struct Expm1Degree<__half> {
    static constexpr size_t val = 6;
};

double rand(double min, double max) {
  double range = (max - min);
  double div = RAND_MAX / range;
  return min + (rand() / div);  // NOLINT
}

template<typename T>
struct GetRandT;

template<>
struct GetRandT<double> {
    static double func(double min, double max) {
        return rand(min, max);
    }
};

template<>
struct GetRandT<float> {
    static float func(double min, double max) {
        return (float) rand(min, max);
    }
};

template<>
struct GetRandT<__half2> {
    static __half2 func(double min, double max) {
        return __half2(__float2half((float)rand(min, max)), __float2half((float)rand(min, max)));
    }
```

```
};

template<>
struct GetRandT<__half> {
    static __half func(double min, double max) {
        return __float2half((float)rand(min, max));
    }
};

using EXPM1 = aerobus::expm1<int_type, Expm1Degree<float_type>::val>;


__device__ INLINED float_type f(float_type x) {
    return EXPM1::eval(x);
}

__global__ void run(size_t N, float_type* in, float_type* out) {
    for(size_t i = threadIdx.x + blockDim.x * blockIdx.x; i < N; i += blockDim.x * gridDim.x) {
        out[i] = f(f(f(f(f(f(f(f(f(f(f(in[i])))))))))));
    }
}

int main() {
    float_type *d_in, *d_out;
    cudaMalloc<float_type>(&d_in, N * sizeof(float_type));
    cudaMalloc<float_type>(&d_out, N * sizeof(float_type));

    float_type *in = reinterpret_cast<float_type*>(malloc(N * sizeof(float_type)));
    float_type *out = reinterpret_cast<float_type*>(malloc(N * sizeof(float_type)));

    for(size_t i = 0; i < N; ++i) {
        in[i] = GetRandT<float_type>::func(-0.01, 0.01);
    }

    cudaMemcpy(d_in, in, N * sizeof(float_type), cudaMemcpyHostToDevice);

    run<<<128, 512>>>(N, d_in, d_out);

    cudaMemcpy(out, d_out, N * sizeof(float_type), cudaMemcpyDeviceToHost);

    cudaFree(d_in);
    cudaFree(d_out);
}
```

10.4 examples/continued_fractions.cpp

How to use aerobus::ContinuedFraction to get approximations of known numbers

```
#include <cmath>
#include <iostream>
#include <iomanip>
#include "../src/aerobus.h"

static constexpr double PHI = aerobus::ContinuedFraction<
        1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
        1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1>::val;

static const double phi = (std::sqrt(5.0) + 1.0)/2.0;

int main() {
    std::cout << std::setprecision(15) << "Aerobus  PHI : " << PHI << std::endl;
    std::cout << std::setprecision(15) << "Computed PHI : " << phi << std::endl;
    return 0;
}
```

10.5 examples/modular_arithmetic.cpp

How to use aerobus::zpz to perform computations on rational fractions with coefficients in modular rings

```
#include <iostream>
#include "../src/aerobus.h"

using FIELD = aerobus::zpz<2>;
using POLYNOMIALS = aerobus::polynomial<FIELD>;
using FRACTIONS = aerobus::FractionField<POLYNOMIALS>;

// x^3 + 2x^2 + 1, with coefficients in Z/2Z, actually x^3 + 1
```

```
using P = aerobus::make_int_polynomial_t<FIELD, 1, 2, 0, 1>;
// x^3 + 5x^2 + 7x + 11 with coefficients in Z/17Z, meaning actually x^3 + x^2 + 1
using Q = aerobus::make_int_polynomial_t<FIELD, 1, 5, 8, 1>;

// P/Q in the field of fractions of polynomials
using F = aerobus::makefraction_t<POLYNOMIALS, P, Q>;

int main() {
    const double v = F::eval<double>(1.0);
    std::cout « "expected = " « 2.0/3.0 « std::endl;
    std::cout « "value    = " « v « std::endl;
    return 0;
}
```

10.6 examples/make_polynomial.cpp

How to build your own sequence of known polynomials, here Abel polynomials

```
#include <iostream>
#include "../src/aerobus.h"


// let's build Abel polynomials from scratch using Aerobus
// note : it's now integrated in the main library, but still serves as an example

template<typename I = aerobus::i64>
struct AbelHelper {
 private:
    using P = aerobus::polynomial<I>;

 public:
    // to keep recursion working, we need to operate on a*n and not just a
    template<size_t deg, I::inner_type an>
    struct Inner {
        // abel(n, a) = (x-an) * abel(n-1, a)
        using type = typename aerobus::mul_t<
            typename Inner<deg-1, an>::type,
            typename aerobus::sub_t<typename P::X, typename P::template inject_constant_t<an>>
        >;
    };

    // abel(0, a) = 1
    template<I::inner_type an>
    struct Inner<0, an> {
        using type = P::one;
    };

    // abel(1, a) = X
    template<I::inner_type an>
    struct Inner<1, an> {
        using type = P::X;
    };
};

template<size_t n, auto a, typename I = aerobus::i64>
using AbelPolynomials = typename AbelHelper<I>::template Inner<n, a*n>::type;

using A2_3 = AbelPolynomials<3, 2>;

int main() {
    std::cout « "expected = x^3 - 12 x^2 + 36 x" « std::endl;
    std::cout « "aerobus  = " « A2_3::to_string() « std::endl;
    return 0;
}
```

10.7 examples/polynomials_over_finite_field.cpp

How to build a known polynomial (here aerobus::known_polynomials::allone) with coefficients in a finite field (here aerobus::zpz<2>) and get its value when evaluated at a value in this field (here 1).

```
#include <iostream>
#include "../src/aerobus.h"

using GF2 = aerobus::zpz<2>;
```

```
using P = aerobus::known_polynomials::allone<8, GF2>;

int main() {
    // at this point, value_at_1 is an instanciation of zpz<2>::val
    using value_at_1 = P::template value_at_t<GF2::template inject_constant_t<1>>;
    // here we get its value in an arithmetic type, here int32_t
    constexpr int32_t x = value_at_1::template get<int32_t>();
    // ensure that 1+1+1+1+1+1+1+1 in Z/2Z is equal to one
    std::cout << "expected = " << 1 << std::endl;
    std::cout << "computed = " << x << std::endl;
    return 0;
}
```

10.8 examples/compensated_horner.cpp

How to use compensated horner evaluation scheme to get better accuracy when evaluating polynomials close to its roots

See also

publication

```
// run with ./generate_comp_horner.sh in this directory
// that will compile and run this sample and plot all the generated data
#include "../src/aerobus.h"

using namespace aerobus;  // NOLINT

constexpr size_t NB_POINTS = 400;

template<typename P, typename T, bool compensated>
DEVICE INLINED T eval(const T& x) {
    if constexpr (compensated) {
        return P::template compensated_eval<T>(x);
    } else {
        return P::template eval<T>(x);
    }
}

template<typename T>
DEVICE T exact_large(const T& x) {
    return pow_scalar<T, 5>(0.75 - x) * pow_scalar<T, 11>(1 - x);
}

template<typename T>
DEVICE T exact_small(const T& x) {
    return pow_scalar<T, 3>(x - 1);
}

template<typename P, typename T, bool compensated>
void run(T left, T right, const char *file_name, T (*exact)(const T&)) {
    FILE *f = ::fopen(file_name, "w+");
    T step = (right - left) / NB_POINTS;
    T x = left;
    for (size_t i = 0; i <= NB_POINTS; ++i) {
        ::fprintf(f, "%e %e %e\n", x, eval<P, T, compensated>(x), exact(x));
        x += step;
    }
    ::fclose(f);
}

int main() {
    {
        // (0.75 - x)^5 * (1 - x)^11
        using P = mul_t<
            pow_t<pq64, pq64::val<
                typename q64::template inject_constant_t<-1>,
                q64::val<i64::val<3>, i64::val<4>>, 5>,
            pow_t<pq64, pq64::val<typename q64::template inject_constant_t<-1>, typename q64::one>, 11>
        >;
        using FLOAT = double;
        run<P, FLOAT, false>(0.68, 1.15, "plots/large_sample_horner.dat", &exact_large);
        run<P, FLOAT, true>(0.68, 1.15, "plots/large_sample_comp_horner.dat", &exact_large);

        run<P, FLOAT, false>(0.74995, 0.75005, "plots/first_root_horner.dat", &exact_large);
        run<P, FLOAT, true>(0.74995, 0.75005, "plots/first_root_comp_horner.dat", &exact_large);

        run<P, FLOAT, false>(0.9935, 1.0065, "plots/second_root_horner.dat", &exact_large);
        run<P, FLOAT, true>(0.9935, 1.0065, "plots/second_root_comp_horner.dat", &exact_large);
```

```
    }
    {
        // (x - 1) ^ 3
        using P = make_int_polynomial_t<i32, 1, -3, 3, -1>;

        run<P, double, false>(1-0.00005, 1+0.00005, "plots/double.dat", &exact_small);
        run<P, float, true>(1-0.00005, 1+0.00005, "plots/float_comp.dat", &exact_small);
    }
}
```

Index