

NoCK

Computing obstruction for compact Clifford-Klein form

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Abstract

In this package we develop functions for algorithms of finding homogeneous spaces of semisimple non-compact Lie groups which do not admit compact Clifford-Klein forms.

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Chapter 1

Introduction and notation

Notation for real Lie algebra is from [CoReLG] Package. Notice: We found some misspelling:

- "D",4,5 is $\mathfrak{so}(1,7)$
- "D",4,4 is $\mathfrak{so}(3,5)$
- "E",7,3 is $\mathfrak{e}_{7(-25)} = EVII$
- "E",7,4 is $\mathfrak{e}_{7(-5)} = EVI$

To be sure, check rank or dimension and check result with table in [onvin].

Example

```
gap> G:=RealFormById( "E", 7,3);
<Lie algebra of dimension 133 over SqrtField>
gap> rankG:=Dimension(CartanSubalgebra(G));
7
gap> rankRG:=Dimension(CartanSubspace(G));
3
gap> dimG:=Dimension(G);
133
gap> P:=CartanDecomposition( G ).P;
<vector space over SqrtField, with 54 generators>
gap> dimPforG:=Dimension(P);
54
gap> K:=CartanDecomposition( G ).K;
<Lie algebra of dimension 79 over SqrtField>
gap> rankK:= Dimension(CartanSubalgebra(K));
7
gap> dimK:= Dimension(K);
79
```

Chapter 2

func

2.1 dsfds

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2.1.1 NonCompactDimension

▷ `NonCompactDimension(L)` (function)

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Example

```
gap> RealFormsInformation( "A", 4 );
```

2.1.2 PCoefficients

▷ `PCoefficients(type, rank)` (function)

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ornare, tempor arcu nec, iaculis ipsum. Maecenas in felis ut libero sollicitudin sodales vestibulum a arcu. Integer blandit imperdiet nunc, eget volutpat libero mattis eget. Suspendisse.

Example

```
gap> RealFormsInformation( "A", 4 );
```

2.1.3 PCalculate

▷ PCalculate(*pi*, *qi*)

(function)

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Example

```
gap> RealFormsInformation( "A", 4 );
```

2.1.4 AllZeroDH

▷ AllZeroDH(*type*, *rank*, *id*)

(function)

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Example

```
gap> RealFormsInformation( "A", 4 );
```

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