Dmitrii	Adler	Weak Jacobi forms for root lattice of type D_8
Samuele	Anni	Computing L-invariants via the Greenberg-Stevens formula
Edgar	Assing	The sup-norm problem for automorphic forms over number fields in the level aspect
Olga	Balkanova	Prime geodesic theorem for the Picard manifold
Boualem	Benseba	A note in Diophantine Equation

Andras	Biro	Local average of the hyperbolic circle problem for Fuchsian groups
Jim	Brown	Congruences for paramodular Saito-Kurokawa lifts and applications
Kwangho	Choiy	On reducibility of parabolic induction for simply-connected p-adic groups

Soumya	Das	Petersson norms of not necessarily cuspidal Jacobi modular forms and applications
Chantal	David	Moments of cubic Dirichlet twists over function fields
Giuliana	Davidoff	A proposed addition to Bhargava’s thesis
Stephan	Ehlen	New variants of the Doi and Doi-Naganuma lift and applications

Márton	Erdélyi	Kloosterman sums over GL_n
Adriana	Espinosa	A discussion on increasing diversity in STEM
Johann	Franke	Ramanujan identities of higher degree
Dmitry	Frolenkov	Convolution formula for the sums of generalized Dirichlet L-series
Richard	Gottesman	Vector Valued Modular Forms on Gamma_0(2)

Michael	Griffin	Polya’s Program for the Riemann Hypothesis and Related Problems
Xavier	Guitart	Modular forms over cubic fields and algebraic points in elliptic curves
Marcela	Hanzer	Eisenstein series arising from Jordan algebras
Fernando	Herrera Contreras	On a Koecher-Maass series of several variables
Sebastián	Herrero	A Jensen-Rohrlich type formula for the hyperbolic 3-space

Peter	Humphries	Quantum Unique Ergodicity in Almost Every Shrinking Ball
Paul	Jenkins	Canonical bases for spaces of weakly holomorphic modular forms
Jonas	Kaszian	Higher depth quantum modular forms and multiple Eichler integrals
Gene	Kopp	Generating weights of modules of vector-valued modular forms for the Weil representation

Min	Lee	A conjectural extension of Hecke's converse theorem
Hunduma	Legesse Geleta	Error Bernoulli Polynomial
Didier	Lesesvre	Arithmetical Statistics on Quaternion Algebras
Yingkun	Li	Divisibility of Fourier coefficients of meromorphic modular forms
Rob	Little	Kudla Millson Theta Series for U(2,1)
Steffen	Löbrich	Traces of Singular Moduli and Regularized Inner Products
David	Lowry-Duda	Counting Lattice Points on Spheres and Hyperboloids

Amita	Malik	Extremal primes for elliptic curves
Toshiki	Matsusaka	Traces of CM values and cycle integrals of polyharmonic Maass forms
Kathrin	Maurischat	Vector valued Γ-integrals
Jaban	Meher	Certain identities among eigenforms
Andreea	Mocanu	Eisenstein series for Jacobi forms of lattice index
Grant	Molnar	The Arithmetic of Modular Grids
Eric	Moss	Congruences for Fourier Coefficients of Modular Functions of Levels 2 and 4
Michael	Neururer	Fourier expansions at cusps

Giresse Djomo	Okaso	An Algebraic approach of automorphic forms
Manish Kumar	Pandey	Shimura lifts of certain clas of modular forms of half-integral weight
Yiannis	Petridis	Arithmetic Statistics of Modular Symbols
Ian	Petrow	The Weyl law for algebraic tori

Angelo	Rendina	Kurokawa-Mizumoto congruences and degree 8 L-values
Boualem	Sadaoui	The multiple zeta values at the non positive integers
Abhishek	Saha	Integral representation and critical L-values for the standard L-function of a Siegel modular form

Markus	Schwagenscheidt	Borcherds lifts of harmonic Maass forms
Anup Kumar	Singh	Representations of a positive integer by octonary quadratic forms.
Saurabh Kumar	Singh	Weyl bound for p-power twist of GL(2) L-functions
Lejla	Smajlovic	On singular invariants for certain genus one arithmetic groups
Fredrik	Stromberg	Computational aspects of spectral theory for non-congruence subgroups.

George	Turcas	On Fermat's equation over quadratic imaginary fields
Nahid	Walji	A refinement of strong multiplicity one
Haowu	Wang	Non-existence of reflective modular forms
Shaul	Zemel	Heegner Divisors on Toroidal Compactifications of Orthogonal Shimura Varieties

For every quadratic lattice one can define the notion of weak Jacobi forms associated with this lattice. In 1992 K. Withmüller proved that the spaces of weak Jacobi forms associated with root lattices (except E_8) have the structure of a free algebra over the ring of modular forms. However, his proof is very complicated and probably contains some gaps. In my talk I plan to introduce some constructions that help to solve this problem in case D_8 and obtain generators of the corresponding algebra in an explicit way. The talk will be based on joint results with Valery Gritsenko (publication in preparation).

In this talk, I will describe how to compute slopes of p-adic L-invariants of arbitrary weight and level by means of the Greenberg-Stevens formula. The method is based on work of Lauder and Vonk on computing the reverse characteristic series of the Up-operator on overconvergent modular forms. Using higher derivatives of this characteristic series, it is possible to construct a polynomial whose zeros are precisely the L-invariants appearing in the corresponding space of modular forms with fixed sign of the Atkin-Lehner involution at p. This is joint work with Gebhard Böckle, Peter Mathias Gräf and Alvaro Troya.

We will present recent results concerning the sup-norm of GL_2 automorphic forms over number fields. In particular, we will focus on situations that appear for forms which are highly ramified at finite places. This will leads naturally to interesting questions related to the representation theory of GL_2 over local fields.

Let $\Gamma=PSL(2,\Z[i])$ be the Picard group and $\HH^3$ be the three-dimensional hyperbolic space. We study the Prime Geodesic Theorem for the quotient $\Gamma \setminus \HH^3$, called the Picard manifold, obtaining an error term of size $O(X^{3/2+\theta/2+\epsilon})$, where θ denotes a subconvexity exponent for quadratic Dirichlet L-functions defined over Gaussian integers. This is joint work with Dmitry Frolenkov.

In this talk, we investigate the Diophantine equation $x^{2}-kxy+ky^{2}+ly=0$ for integers k and l with k even and we characterized all solution in the case where $l^2<k$.
Similarly, we give a characterization of the positive solutions of the equation $x^{2}-kxy+ky^{2}+2^{r}3^{s}y=0$ where $k\equiv2$ (mod 3) if $r=0$, If not, n, s and t are non-negative integers when $k=2k'+1$ with $k'\equiv2$ (mod 3).

hyperbolic circle problem is the estimation of the number of elements of the Γ-orbit of z in a hyperbolic circle around w of radius R, where z and w are given points of the upper half plane H and R is a large number. An estimate with error term $e^{{2\over 3}R}$ is known, and this has not been improved for any group. Recently Risager and Petridis proved that in the special case $\Gamma =PSL(2,{\bf Z})$ taking $z=w$ and averaging over z in a certain way the error term can be improved to $e^{\left({7\over {12}}+\epsilon\right)R}$. We proved such an improvement for a general Γ, our error term is $e^{\left({5\over 8}+\epsilon\right)R}$ (which is better than $e^{{2\over 3}R}$ but weaker than the estimate of Risager and Petridis in the case $\Gamma =PSL(2,{\bf Z})$). Our main tool is our generalization of the Selberg trace formula proved earlier.

sign −1. It is well known there is a lift of ϕ to a Siegel modular form $f_{\phi} \in S_{k}(\Gamma[M])$ where $\Gamma[M] \subset \textrm{Sp}_4(\mathbb{Q})$ is the paramodular group. In this talk we give a congruence result for Hilbert Siegel modular forms that we then specialize to the paramodular setting. We show there is a congruence between f_{ϕ} and a cuspidal Siegel eigenform with irreducible Galois representation. This congruence provides evidence for the Bloch-Kato conjecture for ϕ not covered by previous work. This is joint work with Huixi Li.

The study on reducibility of parabolic induction plays a crucial role in constructing tempered L-packets of p-adic groups and establishing the endoscopic classification of automorphic representations. In this talk, we shall focus on simply-connected p-adic groups $SL(n), SU(n),$ and $Spin(n),$ and address a combinatorial approach to the study by means of R-groups. We relate their R-groups to those of $GL(n), U(n),$ and $GSpin(n),$ respectively, and discuss a conjectural generalization for an arbitrary simply-connected group. This is based on joint work with D. Goldberg and another with D. Ban and D. Goldberg.

We extend the usual notion of Petersson inner product on the space of cuspidal Jacobi forms to include non-cuspidal forms as well. This is done by examining carefully the relation between certain ``growth-killing" invariant differential operators on the Siegel upper half space of degree 2 and those on H \times C. As applications, we can understand better the growth of Petersson norms of Fourier Jacobi coefficients of Klingen Eisenstein series, which in turn has applications to finer issues about representation numbers of quadratic forms; and as a by-product we also show that any Siegel modular form of degree 2 is determined by its `fundamental' Fourier coefficients.

We present in this talk some results about the first moment of cubic twists of Dirichlet L-functions over the function field Fq(T), when q ≡ 1 (mod 3). In this case, the ground field contains all third roots of 1, and the cubic twists are given by Kummer theory. We first explain the history of the problem and the standard conjectures for moments of L-functions, and present the previous results, over number fields and function fields. The case of cubic twists over number fields was considered in previous work, but never for the full family over a field containing the third roots of unity.

In his remarkable thesis, Manjul Bhargava reformulated Gauss' composition law for quadratic forms in a beautifully elegant, but elementary setting. He went on to generalize his setting to the cases of cubic, quartic, and quintic forms and, in the process, discovered a number of additional composition laws, describing a mathematical framework that explained them and gave him a way to address and resolve other outstanding problems in number theory. In the cubic case, his descriptions are complete, but many of the underlying details are omitted. It would be interesting to fill these in and provide a more complete dictionary in the Bhargava setting of the connection between composition of forms and the arithmetic of cubic fields.

Doi and Doi-Naganuma lifts, which lift elliptic mopdular forms of integral weight k to Hilbert modular forms of parallel weight k on the full Hilbert modular group over a real quadratic field of discriminant D. Namely, we extend the lift in two directions: 1) we extend it to harmonic Maass forms (following Borcherds who previously extended it to weakly holomorphic forms) and 2) we allow forms of level d for any d dividing D. The functions we obtain are analogues of polar harmonic Maass forms on Hilbert modular surfaces. Moreover, as one of our applications, we find that the Eisenstein series appearing in Gross's and Zagier's paper on the factorization of singular moduli is a lift of an incoherent Eisenstein series of weight one attached to an imaginary quadratic field. This connects the proof by Gross and Zagier of the factorization formula with the one given by Schofer using regularized theta lfits.

We define certain generalization of Kloosterman sums over GL_n(F), where F is a finite field. The analogue of Weil's bound for classical Kloosterman sums holds in this setting and it can be proved by an elementary argument (and Weil's bound). Moreover in some cases the general sum can be expressed with classical sums over a finite extension of F.

The purpose of this talk is to discuss key areas related to the recruitment and retention of a diverse population in STEM, with particular emphasis in mathematics. The speaker will also present results from psychological experiments highlighting environmental obstructions to individual performance in mathematics, and the diversification of STEM.

We use techniques regarding generalized Dirichlet series to obtain formulas for a wide class of L-functions at rational arguments. It is shown that these values are related to special functions on the upper half plane which possess similar properties as modular forms. Several formulas of Ramanujan involving values of L-functions at integer arguments turn out to be special cases of the main theorem.

various contexts, from the theory of modular forms to the Prime Geodesic Theorem. On the one hand, the mean value of $L_n(1/2)$ determines the quality of the error term in asymptotic formulas for moments of symmetric square L-functions. On the other hand, investigation of the series $L_n(s)$ at the point 1 is ultimately related to the Prime Geodesic Theorem. Using the Kuznetsov trace formula, we prove a spectral decomposition for the sums of generalized Dirichlet L-series. Among applications are an explicit formula relating norms of prime geodesics to moments of symmetric square L-functions and an asymptotic expansion for the average of central values of generalized Dirichlet L-series. This is joint work with Olga Balkanova.

Vector valued modular forms form a graded module over the ring of modular forms. I will explain how understanding the structure of the module of vector valued modular forms allows one to show that the component functions of vector valued modular forms are solutions to certain ordinary differential equations. In certain cases, one can use a Hauptmodul and hypergeometric series to solve these differential equations. One then obtains the q-series expansions of the vector valued modular forms. This perspective gives a viable approach towards proving certain cases of the unbounded denominator conjecture.

In 1927 Polya proved that the Riemann Hypothesis is equivalent to the hyperbolicity of Jensen polynomials for Riemann’s Ξ-function. This hyperbolicity has only been proved for degrees d=1, 2, 3. We prove the hyperbolicity of 100\% of the Jensen polynomials of every degree. We obtain a general theorem which models such polynomials by Hermite polynomials. This theorem also allows us to prove a conjecture of Chen, Jia, and Wang on the partition function. This is joint work with Ken Ono, Larry Rolen, and Don Zagier.

In this talk I will describe a conjectural construction of algebraic points on modular elliptic curves defined over cubic number fields of mixed signature. The points are defined as integrals of the corresponding modular form, in a way that resembles Darmon's ATR points for curves over real quadratic fields. I will also present some numerical evidence in support of the conjectured rationality. This is joint work with Marc Masdeu and Haluk Sengun.

We describe poles and the corresponding residual automorphic representations of Eisenstein series attached to maximal
parabolic subgroups whose unipotent radicals admit Jordan algebra structure.
(joint work with G. Savin)

The Koecher-Maass series is a Dirichlet series built with the Fourier coefficients of an arbitrary Siegel cusp form. If we evaluate it at a particular complex number we obtain a linear functional of the vector space of cuspidal Siegel modular forms. Such a functional is associated to a particular integral kernel. Such kernel has been worked in several cases.

In this talk we consider the Koecher-Maass series of Siegel cusp forms of degree three twisted by certain Eisenstein series of GL_3(Z). This is a multiple variables Dirichlet series. We find the corresponding integral kernel and describe some of its analytic properties.

characterizes, for a meromorphic function f on the unit disc, the value of the integral of log|f(z)| on the unit circle in terms of the zeros and poles of f inside the unit disc. An important theorem of Rohrlich establishes a version of Jensen’s formula for modular functions f with respect to the full modular group PSL_2(Z) and expresses the integral of log|f(z)| over the corresponding modular curve in terms of special values of Dedekind’s eta function.
In this talk I will present a Jensen-Rohrlich type formula for certain family of functions defined in the hyperbolic 3-space which are automorphic for the group PSL_2(O_K) where O_K denotes the ring of integers of an imaginary quadratic field. This is joint work with Ö. Imamoglu (ETH Zurich), A.-M. von Pippich (TU Darmstadt) and Á. Tóth (Eotvos Lorand Univ.).

a finite volume negatively curved manifold M should behave like random waves as the Laplacian eigenvalue tends to infinity. One manifestation of this conjecture is quantum unique ergodicity on configuration space, which states that the probability measures $|f|^2\, d\mu$ converge weakly to the uniform measure $d\mu$ on M. For $M = \Gamma\backslash H$, these eigenfunctions are Maass forms, and this conjecture is a celebrated theorem of Lindenstrauss and Soundararajan. It is natural to ask whether equidistribution of these measures still occurs in balls centred at fixed points in $\Gamma\backslash H$ whose radii shrink as the Laplacian eigenvalue tends to infinity. We show that if the radius shrinks faster than the Planck scale, equidistribution may fail, and we discuss how to prove (conditional or unconditional) results towards equidistribution for balls shrinking at any scale larger than the Planck scale that are centred at almost every point in $\Gamma\backslash H$.

Canonical bases for spaces of weakly holomorphic modular forms often have many nice properties. These include divisibility results and congruences for their Fourier coefficients, zeros along lines or arcs, and explicit formulas for their generating functions. We discuss recent results in this area, many of which are joint with graduate and undergraduate students.

Jointly with Kathrin Bringmann and Antun Milas, we constructed examples of higher depth quantum modular forms coming from rank two false theta functions appearing in vertex algebra representation theory. The “companions” of the false theta functions in the lower half-plane can be realized both as double Eichler integrals and as non-holomorphic theta series having values of “double error” functions as coefficients.

I will discuss joint work with Luca Candelori and Cameron Franc in which we develop geometric methods to study the weights of the generators of a graded module of vector-valued modular forms of half-integral weight, taking values in a complex representation of the metaplectic group. We use these methods to compute the "generating weights" for the Weil representation attached to cyclic quadratic module of order twice a prime power. The computation takes a detour through classical number theory to make use of some lesser-known facts about the distribution of quadratic residues. Finally, we show that the generating weights approach a simple limiting distribution.

During the workshop focused on Sarnak's Rigidity Conjecture in January 2017, we have formulated a precise conjecture that, if true, extends the converse theorem of Hecke without requiring hypotheses on twists by Dirichlet character or an Euler product. The main idea is to linearize the Euler product, replacing it with twists by Ramanujan sums. In this talk, I provide our motivation and evidence for the conjecture, including results of some special cases and under various additional hypotheses.This is a joint work with S. Bettin, J. Bober, A. Booker, B. Conrey, G. Molteni, T. Oliver, D. Platt and R. Steiner.
Abstract: In this article we introduce and investigate new families of polynomials Bn(1/2 , x) called error Bernoulli polynomials through generating functions, Appell sequences and umbral calculus. We also show that these polynomials are related to the Hermite polynomials.
We aim at studying automorphic forms of bounded analytic conductor, after precisely defining such a notion, in the division quaternion algebra setting. We prove the equidistribution of the universal family with respect to an explicit and geometrically meaningful measure. It leads to answering the Sato-Tate conjectures in this case, and contains the counting law of the universal family, with a power savings error term in the totally definite case.
It is well-known that Fourier coefficients of modular forms satisfy many congruence properties. In this talk, we will look at some weight 4 meromorphic modular forms, whose n-th Fourier coefficient is divisible by n. This is a joint work with Michalis Neuruer at TU Darmstadt.
In their celebrated series of papers around 30 years ago, Stephen Kudla and John Millson developed a theory of holomorphic modular forms, both homological and cohomological, for the Lie groups O(p,q) and U(p,q), related through Poincare duality. In this talk, I shall discuss the case of U(2,1), and following from the work of Funke-Millson on SO(2,2), use this (relatively) down-to-earth example to show how one can relate the behaviour of the cohomological theta series at the Borel-Serre boundary components to the behaviour of the homological special cycles. In particular, we may write the
We study weight 2 modular forms associated to quadratic forms of negative discriminant and relate them to traces of singular moduli of Niebur-Poincaré series. This allows us to compute regularized inner products of these functions, which are given by traces of singular moduli of Green's functions.
We discuss asymptotics for the number of lattice points in a ball of radius R around the origin, and lying on the one-sheeted hyperboloid $x_1^2 + \cdots + x_k^2 = x_{d+1}^2 + h$. These should be thought of as analogies to the Gauss circle problem. We describe ideas and techniques from shifted convolution sums and modular forms and further ideas in progress.

For an elliptic curve E over Q, the distribution of the number of points on E mod p has been well-studied over the last few decades. A relatively recent study is that of extremal primes for a given elliptic curve E. These are the primes p of good reduction for which the number of points on E mod p is either maximal or minimal. For the curve with CM, an asymptotic for the number of extremal primes was determined by James and Pollack. In this talk, I will discuss recent progress in the non-CM case. This is joint work with C. David, A. Gafni, N. Prabhu, and C. Turnage-Butterbaugh.

As a generalization of harmonic Maass forms, we consider polyharmonic Maass forms characterized by the repeating action of the ξ-operator. In this talk, we show that the traces of CM values and cycle integrals of polyharmonic Maass forms of weight 0 appear as the Fourier coefficients of polyharmonic Maass forms of weight 1/2 and 3/2. This is an extension of Zagier and Duke-Imamoglu-Toth's famous works.

We determine Γ-integrals for irreducible rational GL_m-representations. For $m=2$ our result is exhaustive, and we cover some general families. As an application, we define Sturm'S operator for vector valued symplectic modular forms.

For $m=2$ our result is exhaustive, and we cover some general families.

As an application, we define Sturm'S operator for vector valued symplectic modular forms.

We prove Zagier duality between canonical bases for pairs of spaces of weakly holomorphic modular forms, and examine the properties of bivariate generating functions for these bases.

We give congruences modulo powers of 2 for the Fourier coefficients of certain level 2 modular functions with poles only at 0, answering a question posed by Andersen and Jenkins. The congruences involve a modulus that depends on the binary expansion of the modular form's order of vanishing at ∞. We also demonstrate congruences for Fourier coefficients of some level 4 modular functions.

I will talk about Fourier expansions of modular forms at arbitrary cusps. After mentioning some applications of these expansions I will explain how to compute them. Three algorithms for the computation of Fourier expansions have appeared recently and one of them is joint work with Martin Dickson. In the second half of the talk I will talk about joint work with François Brunault, where we calculate the number fields generated by Fourier expansions at cusps as explicit cyclotomic extensions of the field generated by the coefficients at the cusp infinity.

In my paper, I am introducing a more focused algebraic aspect of the automorphic form theory particularly in the field of representation. Further, I leverage a deeper and strong understanding of representations series, isomorphism, automorphism, and group representation.
of half-integral weight to the space of modular forms of integral weight. A. Selberg in his unpublished work found explicitly this correspondence (the first Shimura map S1) for the class of forms which are products of a Hecke eigenform of level one and a Jacobi theta function. Later, B. Cipra generalized the work of Selberg to the case where Jacobi theta functions are replaced by the theta functions associated to Dirichlet charater of prime power moduli, and the level one Hecke eigenforms are replaced by newforms of arbitrary level. D. Hansen and Y. Naqvi generalized Cipra's work (on the image of a class of modular forms under the first Shimura map S1) to cover theta functions associated to Dirichlet characters of arbitrary moduli. In this paper, we show that the earlier results can be modified to get similar results for the t-th Shimura lifts St, for any positive square-free integers t.
forms of weight 2, and the homology of modular curves. They have been the object of extensive investigations by many mathematicians including Birch, Manin, and Cremona. Mazur, Rubin, and Stein have recently formulated a series of conjectures about statistical properties of modular symbols in order to understand central values of twists of elliptic curve L-functions. Two of these conjectures relate to the asymptotic growth of the first and second moments of the modular symbols. In joint work with Morten S. Risager we prove these on average using analytic properties of Eisenstein series twisted with modular symbols. We also prove another conjecture predicting the Gaussian distribution of normalised modular symbols ordered according to the size of the denominator of the cusps.
A basic but difficult question in the analytic theory of automorphic forms is: given a reductive group G and a representation r of its L-group, how many automorphic representations of bounded analytic conductor are there? In this talk I will present an answer to this question in the case that G is a torus over a number field.

has a factor of the large prime 691 in its denominator. This prime is also a factor of the 12th Bernoulli number, and is the modulo of congruence between the Hecke eigenvalues of the weight 12 Eisenstein series and the Delta cusp form itself: this is in accordance with a special case of the Bloch-Kato conjecture. In a joint paper with N. Dummigan and B. Heim, we show that the same phenomenon occurs when considering the spinor L-function associated to the tensor product of an elliptic cusp form and a Siegel cusp form, where the latter is congruent to a Saito-Kurokawa lift modulo a large prime dividing the algebraic part of the L-function associated to the corresponding pre-lift.

In this talk, we relate the special value at a non positive integer
$\underline{\textbf{s}}=(s_{1}, ..., s_{n})= -\underline{\textbf{N}}= (-N_{1},..., -N_{n})$
obtained by meromorphic continuation of the multiple zeta function
\begin{equation*}
 Z(\underline{s})= \sum_{\underline{m} \in
\mathbb{N}^{*n}}{\prod_{i=1}^{n}{\frac{1}{(m_{1}+\dots +m_{i})^{s_{i}}}}}
\end{equation*}
to special values of the function
\begin{equation*}
Y(\underline{s})= \int_{[1, +\infty[^{n}}{\prod_{i=1}^{n}{\frac{1}{(x_{1}+\dots
+x_{i})^{s_{i}}}}} d\underline{x}}.
\end{equation*}

for this, we use Raabe's formula and the Bernoulli numbers.

an explicit pullback formula that gives an integral representation for the twisted standard L-function for a holomorphic vector-valued Siegel cusp form of degree n and arbitrary level. In contrast to all previously proved pullback formulas in this situation, our formula involves only scalar-valued functions despite being applicable to L-functions of vector-valued Siegel cusp forms. Further, by specializing our integral representation to the case n=2, we prove an algebraicity result for the critical L-values in that case (generalizing previously proved critical-value results for the full level case).

We extend Borcherds' regularized theta lift in signature (2,1) to harmonic Maass forms whose non-holomorphic part is allowed to grow exponentially at the cusp. We encounter new singularities along geodesics in the upper half-plane. By computing the derivative of the Borcherds lift of a suitable harmonic Maass form, we recover the weight 2 modular integral of Duke, Imamoglu and Toth, which is given by a certain generating series of traces of geodesic cycle integrals of j. Additionally, we construct new Borcherds products of harmonic Maass forms.

In this paper, we find formulas for the number of representations of certain diagonal octonary quadratic forms with some coefficients. We obtain these formulas by constructing explicit bases of the space of modular forms of weight 4 on some congruence subgroup with character.

Let f be a cuspidal eigenform (holomorphic or Maass) for the congruence group $\Gamma_0(N)$ with N square-free. Let p be a prime and let χ be a primitive character of modulus p^{3r}. We shall prove the Weyl-type subconex bound
\begin{align*}
L \left(\frac{1}{2} + it, f \otimes \chi \right) \ll_{f, t, \epsilon} p^{r + \epsilon},
\end{align*}
where $\epsilon > 0$ is any positive real number.

We study the singular moduli problem corresponding to (two) canonical generators x_N and y_N of the holomorphic function field associated to certain genus one arithmetic groups, by which we mean the arithmetic and algebraic nature of the numbers x_N (z) and y_N (z) for any CM point z in the upper half plane.

The spectral theory for congruence subgroups of the modular group is fairly well understood since Selberg and the development of the Selberg trace formula. In particular it is known that congruence subgroups have an infinite number of discrete eigenvalues (corresponding to Maass cusp forms) and there is extensive support towards Selberg's conjecture that there are no small eigenvalues for congruence subgroups. In contrast to this setting, much less is known for noncongruence subgroups of the modular group even though these groups are clearly arithmetic. In fact, it can be shown that under certain circumstances small eigenvalues must exist. And even the existence of infinitely many "new" discrete eigenvalues is not known for these groups. The main obstacle for developing the spectral theory further in this setting that there is in general no explicit formula for the scattering determinant. In this talk I will discuss computational methods and results for computing scattering determinants for non-congruence subgroups and in particular how this can be used together with a version of Weyl's law to provide (heuristic) certification of computed eigenvalues.

Assuming a deep but standard conjecture in the Langlands programme, we prove Fermat's Last Theorem over $\mathbb Q(i)$. Under the same assumption, we also prove that, for all prime exponents $p \geq 5$, the Fermat's equation $a^p+b^p+c^p=0$ does not have non-trivial solutions over $\mathbb Q(\sqrt{-2})$ and $\mathbb Q(\sqrt{-7})$. arxiv.org/abs/1710.10163
Given two distinct unitary cuspidal automorphic representations for GL(n)/\Q, we denote S to be the set of primes at which the associated Hecke eigenvalues differ. Under the assumption that the adjoint lifts are automorphic and furthermore cuspidal, we obtain a lower bound on the lower Dirichlet density of S.
An even lattice of signature (2,n) is called 2-reflective if it admits a non-constant holomorphic modular form whose divisor is contained in the (-2)-Heegner divisor. In this talk I prove the new classification result that there is no 2-reflective lattice when $n\geq 15$ and $n\neq 19$ except the even unimodular lattices of signature (2,18) and (2,26).
Borcherds proved, using his theta lift, that the Heegner divisors on (open) orthogonal Shimura varieties behave like the coefficients of a modular form. We examine suitable extensions of these divisors to toroidal compactifications of such Shimura varieties, for which such a modularity result continues to hold.