MATT ANDO
University of Illinois at Urbana-Champaign

P-adic modular forms and the string orientation of Topological Modular Forms

In his Antwerp paper on p-adic modular forms, Serre remarks by way of introduction that congruences among families of Bernoulli numbers are also satisfied by families of Eisenstein series. I will report on the work of a number of people, particularly Hopkins, Goerss, and Rezk, showing that the Atiyah-Bott-Shapiro orientation and the string orientation of tmf are instances of this principle.

CLARK BARWICK
University of Oslo

Differential Calculus in Spectral Algebraic Geometry

In this talk, I will give motivations for and a brief overview of the theory of D-crystals in spectral algebraic geometry. Using this theory, I will develop conjectures related to the geometric Langlands program and certain K-theory conjectures of Rognes.

MARK BEHRENS
Massachusetts Institute of Technology

Topological Automorphic Forms

I will describe some cohomology theories of topological automorphic forms which arise from a theorem of Jacob Lurie. These are associated to Shimura varieties for the groups $\mathrm{U}(1, n-1)$ in the same way that topological modular forms are associated to the moduli space of elliptic curves. The corresponding theories detect v_n-periodic phenomena. I will also describe a related spectrum which approximates the $K(n)$-local sphere. This is joint work with Tyler Lawson.

IAN GROJNOWKSI
University of Cambridge

TBA

MAX LIEBLICH
Princeton University

Compact moduli of projective bundles

I will describe a way to show that spaces of PGL_n-bundles (Azumaya algebras) on an algebraic surface are irreducible. The key is to find a nice compactification and exploit an inductive structure provided by the boundary. The existence of a nice compactification is related to a version of the Skolem-Noether theorem for algebra objects of the derived category, while the properties of the compactified space are best understood in terms of a finite covering by a moduli stack of vector bundles on a stacky version of the original surface. The irreducibility of these spaces has concrete consequences in arithmetic.

WENDY LOWEN
Vrije Universiteit Brussel

Deformations of ringed spaces as algebroid prestacks

For a ringed space (X, O), we show that the deformations of the abelian category $\mathrm{Mod}(O)$ of sheaves of O-modules (which can be thought of as "non-commutative spaces") are obtained from algebroid prestacks, as introduced by Kontsevich. In case X is a quasi-compact separated scheme the same is true for $\mathrm{Qch}(O)$, the category of quasi-coherent sheaves on X. We relate to recent work by Bressler,Gorokhovski,Nest,Tsygan.

JACOB LURIE
Harvard University

Higher Equivariance and Loop Group Representations

I will begin by describing a relationship between equivariant cohomology theories and algebraic groups. The motivating example is provided by equivariant K-theory, which is closely related to the multiplicative group. However, the same ideas can be applied in the case of elliptic curves to produce equivariant versions of the Hopkins-Miller theory of topological modular forms (elliptic cohomology). In this latter case, it is possible to use the self-duality of elliptic curves to produce a more elaborate "2-equivariant" theory of elliptic cohomology. In this talk, I will sketch some of these ideas, and describe a relationship between 2-equivariant elliptic cohomology and the theory of loop group representations.

NIKO NAUMANN
University of Regensburg

Arithmetically defined dense subgroups of Morava stabilizer groups

In order to generalize the "modular" resolution of the $K(n)$-local sphere given by M. Behrens by using topological automorphic forms (M. Behrens/T. Lawson), it seems useful construct dense subgroups of stabilizer groups in terms of quasi-isogenies of suitable abelian varieties. After reviewing the motivating topological results, we state and solve the resulting arithmetic problems which evolve around approximation in algebraic groups.

BEHRAND NOOHI
Max Planck Institut fur Mathematik

Fulton-MacPherson bivariant theories and string topology for stacks

For a certain class of topological stacks (including quotients of smooth compact Lie group actions on manifolds) we show the existence of the string product on the homology of the loop stack. The main technical tool is the Fulton-MacPherson bivariant theory. This is a joint work with K. Behrend, G. Ginot, and P. Xu.

CHARLES REZK
University of Illinois at Urbana-Champaign

Morava E-theory of commutative S-algebras and the Frobenius congruence

The purpose of this talk is to describe the structure inherent in the Morava E-theory of a commutative S-algebra. Ando, Hopkins, and Strickland have shown how this structure encodes information about isogenies of deformations of a finite height formal group. We will use their work to describe the natural target category C of the functor defined by Morave E-homology whose domain category is commutative S-algebras. The answer is that C is a category of sheaves on a certain generalized stack, with a twist: the objects of C are exactly those sheaves which satisfy a certain congruence condition related to Frobenius isogenies. This answer is a precise analogue to the "Wilkerson criterion" for lambda-rings.

MARKUS SPITZWECK
University of Goettingen

Integral derived fundamental groups for Tate motives

In my talk I want to give a description of the derived category of geometric mixed Tate motives in terms of representations of a derived affine group scheme defined over the integers. This description proceeds in two steps, the first being a description in terms of modules over a graded E_∞-algebra of a certain type (which we call Tate type), the second a general representation theoretic description of perfect modules over an algebra of Tate type.

BERTRAND TOËN
CNRS - Université Paul Sabatier

Homotopical finiteness of smooth and proper dg-algebras

The purpose of this talk is to present a certain class of (associative) dg-algebras, called smooth and proper, and which appear naturally in algebraic geometry and representation theory. The main result of this talk states that these dg-algebras are defined by a finite number of data, and its proof is based on techniques from derived algebraic geometry. I will also present an interpretation of this result in terms of the classifying stack of dg-algebras.

MICHEL VAQUIÉ
Universite Toulouse 3

Characterization of algebraic spaces by their derived category

tba

ANGELO VISTOLI
Universita di Bologna

Essential dimension and algebraic stacks

I will report on joint work with Patrick Brosnan and Zinovy Reichstein. We extend the notion of "essential dimension", which has been studied so far for algebraic groups, to algebraic stacks. The problem is the following: given a geometric object X over a field K (e.g., an algebraic variety), what is the least transcendence degree of a field of definition of X over the prime field? In other words, how many independent parameters do we need to define X? We have complete results for smooth, or stable, curves in characteristic 0. Furthermore the stack-theoretic machinery that we develop can also be applied to the case of case of algebraic groups, showing for example that the essential dimension of the group Spin_n grows exponentially with n.

CHENCHANG ZHU
Fourier Institute

Lie theory of Lie algebroids via higher structures in differentiable geometry

Higher structures such as differentiable stacks, simplicial objects, Lie groupoids, gerbes have been recently introduced in differential geometry. They are useful, for example, to integrate Lie algebroids. Lie algebroids are a mixture of Lie algebras and manifolds, or it could be understood as a degree-1 super-manifold with a degree-1 vector field Q with $Q^2 = 0$. Unlike a (finite dimensional) Lie algebra which always has a (simply connected) Lie group corresponding to, a Lie algebroid may not have a corresponding Lie groupoid. But there is a one-to-one correspondence between Lie algebroids and stacky Lie groupoids (or Lie 2-groupoids). Lie's second theorem also holds for these universal objects.