Alexander Alldridge: *Invariant differential operators on reductive symmetric superspaces.*

Abstract: In the study of large N statistics of random matrix ensembles, embeddings of ten of Cartan's infinite series of Riemannian symmetric spaces G/K into complex symmetric superspaces occur in a natural fashion, as Zirnbauer has shown. In this context, questions of harmonic analysis (such as to the validity of a spherical Fourier inversion theorem for K-invariant functions) arise. This suggests a systematic study of harmonic analysis on symmetric superspaces, which we are undertaking as part of an ongoing programme with J. Hilgert (Paderborn) and M.R. Zirnbauer (Köln). In the talk, we will explain our generalisation of the Harish-Chandra isomorphism to this context. As in the classical setup, it establishes an isomorphism of the algebra of invariant differential operators with the image under restriction onto a Cartan subspace of the symmetric invariants. This image can moreover be described as the set of polynomial invariants of a linear group acting on the Cartan subspace. Despite this analogy, many new features occur: For instance, the variety defined by the algebra of symmetric invariants (which is affine the classical case) may be singular; moreover, the "super-Weyl group" is no longer finite, and cannot be defined as a subquotient of the isotropy supergroup of the symmetric space. In the proof of the theorem, the theory of invariant Berezin integration and the generalisation of the Harish-Chandra orbital integral to the context of Lie supergroups are crucial.

Bo Chen: *Gabriel-Roiter measure and representation type.*

Michael Ehrig*: MV-polytopes and crystal combinatorics.*

Abstract: For an algebraic group G, Anderson introduced the notion of MVpolytopes as images of Mirkovic-Vilonen cycles under the moment map of the affine Grassmannian. It was shown by Kamnitzer that MV-polytopes and their corresponding cycles can be described as solutions of the tropical Pl□uecker relations. We give a direct combinatorial construction of the MVpolytopes using crystal combinatorics.

Peter Fiebig: *An introduction to some aspects of the Langlands program*.

Anne Henke*: Schur-algebras of Brauer-algebras.*

Joachim Hilgert: *Patterson-Sullivan distributions and pseudodifferential calculus on symmetric spaces of rank 1*.

Abstract: Anantharam and Zelditch observed a remarkable connection between Wigner and Patterson-Sullivan distributions on compact hyperbolic surfaces. These are distributions associated with the eigenvalues of the Laplace-Beltrami operators and satisfy invariance properties under the geodesic flow. A key tool to establish this connection is a specific pseudodifferential calculus adapted to the symmetries of the situation. We reformulate these results in terms of group theory and generalize them to rank 1 symmetric spaces. This is joint work with M. Schroeder.

Gerhard Hiss: *Two famous conjectures in the representation theory of finite groups*.

Friedrich Knop: *On a construction of semisimple tensor categories.*

Ayse Kurtdere: *Kaehler-reduction and complexifiction of contact mannifolds.*

Sefi Ladkani: *Combinatorial aspects of derived equivalence*.

Natalie Naehrig: *On the Modular Representation Theory of Endomorphism Rings.*

Steffen Oppermann: t.b.a.

Guido Pezzini: *Automorphisms of regular and wonderful varieties*.

Abstract: Wonderful varieties are algebraic varieties equipped with an action of a linear semisimple group G and satisfying axioms inspired by the well known compactifications of symmetric spaces of De Concini and Procesi. They are a sort of generalization of complete G-homogenous spaces (i.e. partial flag varieties). Using Luna's invariants it is possible to determine the full connected automorphism groups of these varieties, starting from the representation-theoretical results of Bien and Brion on their tangent and action sheaves. In the talk we will discuss many examples and explain the role of varieties with only 1 or 2 G-orbits in the description of these groups. Furthermore, the wonderful case can be used to study the connected automorphism groups of more general varieties, in particular the so-called "regular" ones. We will present this work in progress, aimed to generalize the description of autmorphism groups of smooth complete toric varieties given by Demazure in 1974.

David Ploog: *Algebras, lattices and categories for some surface singularities.*

Abstract: The study of quasi-homogenous surface singularities is related to algebra (including weighted projective lines), topology (starting with the Milnor lattice) and geometry (via resolutions and smoothings). In this talk, we focus on Kleinian and Fuchsian singularities and explain how the Milnor lattice and its Coxeter element can be lifted to to a triangulated category, using surface geometry (joint work with Wolfgang Ebeling). There is another such lift of the Milnor lattice, using singularity categories and related to weighted projective lines, by Kajiura, Saito, and Takahashi. We also mention how to compare these different lifts in a natural way (joint work with Chris Brav).

Markus Reineke: *DT-invariants and quivers.*

Jan Schröer: *A categorification of the chamber Ansatz.*

Henrik Seppaenen: *Branching laws via geometric quantization.*

Abstract: Let G be a connected compact Lie group and K a closed subgroup. By the Borel-Weil theorem any irreducible representation of G can be realized as the space of holomorphic sections of a line bundle. It is therefore interesting to study the decomposition of this space into K-irreducibles from a geometric point of view. I will present an outline of such a method using symplectic geometry.This is a joint project with Joachim Hilgert.

Britta Spaeth*: About the inductive McKay condition in a maximally split case*

Christoph Zellner: *Semibounded representations of infinite-dimensional oscillator groups.*

Greg Zuckerman: *Recent results on non-highest weight modules over semisimple Lie algebras.*