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FAKULTÄT FÜR MATHEMATIK  
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Einladung zur öffentlichen Defensio von  
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Thema der Dissertation:

**Poisson transforms for differential forms adapted to  
the flat parabolic geometries on spheres**

Abstract:

In this talk we consider a new approach to Poisson transforms for vector-valued differential forms between homogeneous parabolic geometries  $G/P$  and Riemannian symmetric spaces  $G/K$ . Explicitly, these are  $G$ -equivariant integral operators which are determined by an invariant differential form defined on an associated homogeneous space and thus fully characterized by an invariant element in a finite dimensional representation of a reductive Lie group. Since the presented construction of Poisson transforms is adapted to the algebra structure of differential forms they are naturally compatible with the Riemannian exterior calculus on  $G/K$  as well as the BGG-machinery on  $G/P$ . As a first application, we construct a uniform family of Poisson transforms  $\Omega^k(G/P) \rightarrow \Omega^k(G/K)$  for almost all choices of  $G$  and  $P$  and easily conclude that their images consist of coclosed differential forms. Subsequently, we turn to the case of complex hyperbolic space, where we consider operators which factor to the Rumin complex.

Prüfungssenat:

Univ.-Prof. Dr. Josef Hofbauer (Vorsitz)  
(Universität Wien)

Univ.-Prof. Mag. Dr. Andreas Cap  
(Universität Wien)

Prof. Dr. Andreas Juhl  
(Humboldt Universität Berlin)

Prof. Dr. Bent Ørsted  
(Aarhus University)

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**Ort:** Fakultät für Mathematik, Seminarraum 01, Oskar-Morgenstern-Platz 1