

Poisson transforms of differential forms

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In this talk I will give an overview of my PhD-thesis which is the construction and analysis of Poisson transforms of differential forms between homogeneous parabolic geometries and Riemannian symmetric spaces using methods of the representation theory of Lie groups. The first part is dedicated to introduce basic notions of differential geometry and Lie theory. Afterwards, the relation between geometric objects on homogeneous spaces and invariant objects in finite dimensional representations will be analysed. In particular, we will consider Riemannian symmetric spaces and homogeneous parabolic geometries as two diametral examples of homogeneous spaces. At the end, we will define Poisson transforms and show how the question of their existence can be reduced to finite dimensional representation theory.