Radon transform on symmetric matrix domains

Genkai Zhang

Chalmers Univ. of Tech. and Göteborg Univ., Sweden

Abstract

Let X be the matrix unit ball in $M_{n-k,k}(\mathbb{K})$ consisting of contractive matrices where $\mathbb{K} = \mathbb{R}, \mathbb{C}, \mathbb{H}$. The domain X is a realization of the symmetric space G/K with $G = U(n-k, k; \mathbb{K})$. The matrix ball y_o of lower dimension in $M_{k'-k,k}$ with $k' \leq n$ is a totally geodesic submanifold of X and let Y be the manifold of all G-translations of the submanifold y_0. We consider the Radon transform from functions on X to functions on Y and we obtain an inversion formula. For that purpose we prove some Bernstein-Sato type formula for certain distributions which turn out to be closely related to Berezin transform.