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Title: Analytic families associated to Radon transforms in integral geometry

Abstract: Various Radon transforms (in euclidean, elliptic, and hyperbolic spaces) give rise to the corresponding analytic families of integral operators. Numerous important operators of integral geometry (like the hemispherical Funk transform, spherical section transforms, p-cosine transforms and their higher rank generalizations) are members of these families. This way of thinking enables one to obtain a series of interesting results by making use of the relevant tools of harmonic analysis and number theory.
The lecture concerns the following topics: Fractional analogues of euclidean Radon transforms; geodesic transforms on the sphere and associated analytic families of intertwining operators; the Radon transform on Grassmann manifolds; the generalized Minkowski-Funk transform for non-central spherical sections, and small divisors for spherical harmonic expansions; the Busemann-Petty problem; cosine transforms in the real hyperbolic space.