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Title: Inversion of the Radon transform via Gårding-Gindikin fractional integrals.

Abstract: The Funk-Radon transform has figured prominently in convex geometry during the past decade and inversion formulas have played an important role. There are many standard inversions, some involving differential operators and others involving fractional integrals. Here we consider a natural generalization of the Radon transform, which acts on functions on Grassmannians to produce functions on other Grassmannians. These transforms also occur in convex geometry and have been studied and inverted before, e.g., by I.M. Gelfand and his collaborators. Here we establish a connection between the Radon transform and Gårding-Gindikin fractional integrals associated to the cone of positive definite matrices, and use it to obtain Abel type representations and inversion formulae on various function spaces, including L^p. Joint work with Boris Rubin.