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Singular Radon transforms on discrete nilpotent groups

Singular and maximal Radon transforms are generalizations of singular integrals and maximal functions, when averages are taken over curves and surfaces. If they are given in terms of integral polynomials, such transformations have natural discrete analogues whose l^p mapping properties are related to questions both in ergodic and number theory.

We plan to survey some past results in the discrete settings, as well as to discuss the l^2 bounds of singular averages over polynomial “curves” on the integral (3 by 3) upper triangular group.

This is joint work with A. Ionescu, E. M. Stein and S. Wainger.