THE l^p-IMPROVING PROBLEM FOR ARITHMETIC RADON AVERAGES: SUBCRITICAL ESTIMATES FOR CURVES

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ABSTRACT. The L^p-improving problem for Radon transforms (the study of the improvement in integrability caused by averaging along a submanifold) can be recast in the arithmetic setting of $\mathbb{Z}^d$ and graphs of polynomials with integer coefficients. Recent supercritical results have been obtained for the case of the moment curve $(n, n^2, ..., n^d)$ as an application of the Vinogradov Mean Value theorem, but unlike the continuous case they are short of the conjectured endpoint. In this talk we show how one can partially bridge the gap by approaching the endpoint from the opposite direction, that of subcritical estimates. We will show how to obtain such estimates via an arithmetic version of Christ's method of refinements.

Joint work with Dendrinos and Hughes.