THE POLYNOMIAL PARTITION FOR MAXIMAL DIRECTIONAL AVERAGES

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The topic of this talk is maximal directional averages for directions in given algebraic varieties. I will describe some recent results which provide essentially sharp L^2-bounds for these operators. Besides the geometric constraint that the set of directions V lies on an algebraic variety of given degree and dimension, there is no other restriction or structure on the set V. The method of proof is a divide and conquer technique yielding almost orthogonality principles. This is achieved via a polynomial partition scheme on the set of directions and is novel in this context. This talk reports on joint work with Francesco Di Plinio (Wustl).