SPEAKER:

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TITLE:

l^2 Decoupling in $\mathbb{R}^2$ for curves with Vanishing Curvature

ABSTRACT:

Decoupling inequalities have many applications in various different parts of Mathematics. It was initiated by Wolf in 90's and a major breakthrough came in 2015 in the work of Bourgain, Demeter. This l^2 decoupling inequality of Bourgain-Demeter had many powerful applications; for example, the proof of the main conjecture in Vinogradov's Mean Value Theorem, an 80 year old problem in number theory counting lattice points on surfaces. We expand the class of curves for which the l^2 decoupling conjecture holds for $2 \leq p \leq 6$ and give an application in Number Theory. Our class of curves includes all real-analytic regular curves with isolated points of vanishing curvature and all curves of the form $(t, t^{1+\nu})$ for $\nu \in (0, \infty)$. This is a joint work with Maxim Gilula, Linhan Li, Jeremy Schwend and Yakun Xi.