

Title: A decoupling interpretation of an old argument for Vinogradov's Mean Value Theorem

Abstract: There are two proofs of Vinogradov's Mean Value Theorem (VMVT), the harmonic analysis decoupling proof by Bourgain, Demeter, and Guth from 2015 and the number theoretic efficient congruencing proof by Wooley from 2017. While there has been recent work illustrating the relation between these two methods, VMVT has been around since 1935. It is then natural to ask: What does old partial progress on VMVT look like in harmonic analysis language? How similar or different does it look from current decoupling proofs?

We talk about a refinement of a 1973 argument of Karatsuba that showed partial progress towards VMVT and interpret this in decoupling language. This yields an argument that only uses rather simple geometry of the moment curve. This is joint work with Brian Cook, Kevin Hughes, Olivier Robert, Akshat Mudgal, and Po-Lam Yung.