Abstract

In the past few years, Bourgain, Demeter and Guth developed a very powerful machinery in harmonic analysis, now known as decoupling inequalities. These inequalities capture certain “interference patterns” that arise, when one adds up functions whose Fourier transforms are supported in different regions of a curved submanifold of $\mathbb{R}^n$. They made possible breakthroughs in many areas of mathematics, from PDEs to analytic number theory. In this talk, we will attempt to give a brief survey of this rapidly growing area.