

# Fourier Analysis methods in Number Theory

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## Abstract

We will explain the Fourier-analytic ideas behind the Hardy-Littlewood circle method and describe their role in the proof of Roth's Theorem on 3-term arithmetic progressions. We will also give a rough sketch of the limitations that make these classical techniques unsuitable for tackling longer arithmetic progressions, and motivate the introduction by Gowers of the eponymous norms that led to his celebrated new proof of Szemerédi's Theorem in 2001.

**Time:** 12 p.m, 24<sup>th</sup> November 2021

**Location:** B3.02

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