



## Seminar/Talk

# Some new results in higher order Fourier analysis

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Host: Matthew Kwan

Abstract: Higher order Fourier analysis is a generalization of the classical Fourier analysis in which the role of linear phases is played by polynomial phases and related objects. It originates from the work of Gowers in which he proved quantitative bounds in Szemerédi's theorem on arithmetic progressions and introduced a family of norms on functions on an abelian group, now known as the uniformity norms. These norms, denoted by  $U^k$  for  $k \geq 2$ , are the central objects of study in this subject and a key question is the inverse problem, which is to understand the structure of functions with a large value of uniformity norm. In this talk, I will present some novel results in this field: a general inverse theory for the  $U^4$  norm, as well as a joint work with arko Ranelovi, in which we prove that the Möbius function does not correlate with polynomial phases in function fields over prime fields.

**Tuesday, April 21, 2026 04:30pm - 05:20pm**

Raiffeisen Lecture Hall, Central Building



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