Contribution ID: **6**   Type: **not specified**

Capturing Additive Structures via Gowers Norms: From Arithmetic Progression Counts to Inverse Theorems

Sunday, 24 August 2025 10:10 (30 minutes)

The Gowers uniformity norm has played a significant role in additive combinatorics as a measure of randomness associated with solution sets of certain linear configurations. In this talk, I introduce the notion of Gowers uniformity norms and demonstrate how they capture additive structures in a given set of integers. Gowers norms capture additive structures both through k-term arithmetic progression counts and through their connection to polynomial Freiman–Ruzsa via Gowers inverse theorems. I present applications of Gowers norms in both directions.

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Session Classification: Contributed talks