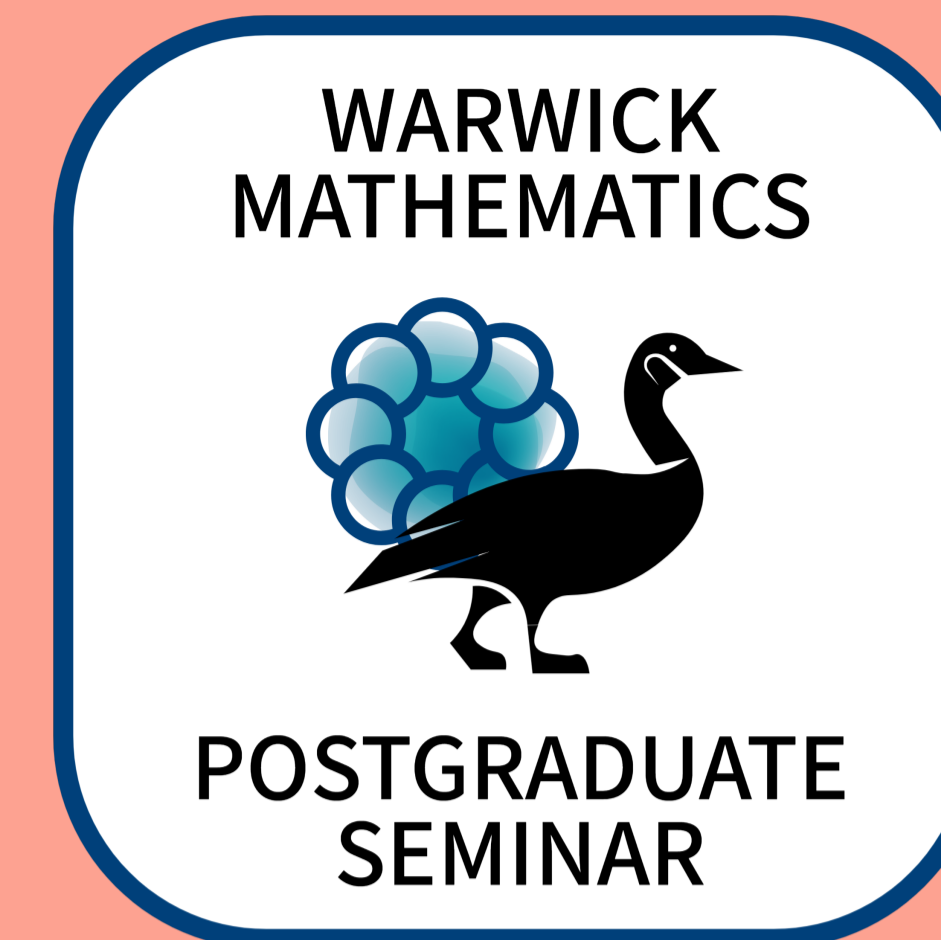


Heisenberg Kakeya sets

Pietro Wald

Week 5 - Term 2



Abstract

A subset of \mathbb{R}^n is called a Kakeya set if for every direction in the unit sphere there is a unit segment contained in the set and parallel to such direction. Perhaps surprisingly, questions about their dimension turn out to be linked to several open problems in harmonic analysis and PDE. Recently, J. Liu introduced a notion of Kakeya set in the context of the Heisenberg group and proved a sharp lower bound for their "dimension".

In this talk, I will introduce: Kakeya sets (in \mathbb{R}^n), the Heisenberg group, and Heisenberg Kakeya sets. After reviewing a definition of dimension, I will sketch how Liu's theorem can be proven in a conceptually simpler way. This is based on a joint work with K. Fässler and A. Pinamonti.

Time

12 pm, 8th
February 2023

Location

Room B3.02

Organisers

Patience Ablett, Alvaro Gonzalez, Daniel
Marlowe and Katerina Santicola