



# Analysis Seminar

## Local well-posedness for the periodic Boltzmann equation with constant collision kernel

By

**Engin Başakoğlu**

(Institute of Mathematical Sciences, Shanghai Tech University)

**Abstract:** The Boltzmann equation holds fundamental importance in the kinetic theory of gases and plasmas, describing the behavior of a dilute gas of identical particles in a specific scaling limit. Recent studies by Chen, Denlinger, Pavlovic, Holmer, Shen, and Zhang have focused on the equation's well-posedness, both with and without the Wigner transform, establishing results in Euclidean spaces using methods from nonlinear dispersive PDEs. In this talk, we focus on the periodic Boltzmann equation with a constant collision kernel. We will introduce a novel Strichartz estimate that facilitates the proof of local well-posedness (LWP) for the Boltzmann equation, marking the first LWP result in the periodic case for thresholds below  $d/2$ , which is the limit for energy methods.

**Date:** Monday, February 17, 2025

**Time:** 15:40-16:40

**Place:** ZOOM

This is an online seminar. To request the zoom link, please send a message to [goncha@fen.bilkent.edu.tr](mailto:goncha@fen.bilkent.edu.tr)