Department of Mathematics, BGU

Colloquium

On *Dec ,9 2025*

At *14:30 – 15:30*

In *Math 101-*

Jonathan Fruchter (University of Bonn)

will talk about

Virtual homological torsion in low dimensions

Abstract: A long-standing conjecture of Nicolas Bergeron and Akshay Venkatesh predicts that in closed hyperbolic 3-manfiolds, the amount of torsion in the first homology of finite-sheeted normal covers should grow exponentially with the degree of the cover as the covers become larger, at a rate reflecting the volume of the manfiold. Yet no finitely presented residually finite group is known to exhibit exponential torsion growth in first homology along an exhausting chain of finite-index normal subgroups.

In this talk I will explain how a two-dimensional lens offers a clearer view of some of the underlying mechanisms that create homological torsion in finite covers, and why obtaining exponential growth may be more tractable in this setting. I will also discuss how these ideas connect to the question of profinite rigidity: how much information about a group is encoded in its finite quotients.