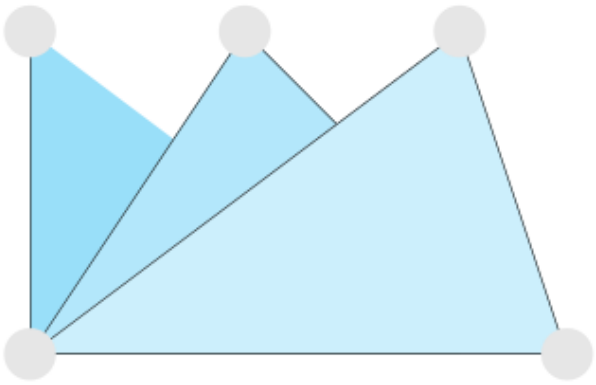
Laplacian Eigenvalues of Simplicial Complexes

Undergraduate Math Club
CORNELL UNIVERSITY

SPEAKER
Rediet Abebe



ABSTRACT

We'll generalize Brouwer's conjectural family of inequalities for the Laplacian spectrum of graphs to the case of abstract simplicial complexes (of any dimension).
We'll prove this family of inequalities for shifted simplicial complexes and give tighter bounds (linear in the dimensions of the complexes) for simplicial trees. We'll also resolve special cases of partial sums (such as the first, second, and last) completely for all simplicial complexes. Finally, we'll expand on a proof for graphs to show that the conjecture holds with equality for certain threshold graphs.

APR 11 · 4:30

Malott 5th floor lounge · refreshments served