

Colloquium

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DISCRETE MORSE THEORY ON VIETORIS-RIPS COMPLEXES

Friday, March 29, 2019
3:00 p.m. in ES-143
(tea & coffee at 2:30 p.m. in ES-152)

ABSTRACT. Discrete Morse theory is a powerful tool for leveraging "local" topological information about a cell complex to make "global" topological conclusions. One incarnation is Forman's discrete Morse theory, which is popular in topological data analysis (TDA). Another is Bestvina-Brady discrete Morse theory, which has proven to be a fundamental tool in geometric group theory (GGT). In this talk I will discuss a new generalization that encompasses both, and explain how one can view Forman's theory as a special case of Bestvina-Brady's. I will also discuss some applications, both to TDA and to GGT, involving Vietoris-Rips complexes of metric spaces.