1145-55-2251 **Nina Otter*** (`notter@ucla.edu`). *Homology theories for (finite) metric spaces.*
In his work on the generalization of cardinality-like invariants, Leinster introduced the magnitude of a metric space, an isometric invariant that encodes the "effective number of points" of the space. Subsequently Hepworth, Willerton, Leinster and Shulman introduced a homology theory for metric spaces called magnitude homology, which categorifies the magnitude of finite metric spaces. In their paper Leinster and Shulman list a series of open questions, two of which are as follows: "Magnitude homology only 'notices' whether the triangle inequality is a strict equality or not. Is there a 'blurred' version that notices 'approximate equalities?' Almost everyone who encounters both magnitude homology and persistent homology feels that there should be some relationship between them. What is it?" In this talk I will introduce magnitude homology, and give an answer to these questions, which I show are intertwined: it is the blurred version of magnitude homology that is related to persistent homology. If time allows I will then discuss how the ordinary and blurred versions of magnitude homology differ in the limit: ordinary magnitude homology is trivial, while blurred magnitude homology coincides with Vietoris homology. (Received September 25, 2018)