1172-18-305 **Radmila Sazdanovic***, Department of Mathematics NC State Univeristy, Raleigh, NC 27695, and **Victor Summers**. *Torsion in the Magnitude Homology of Graphs.*

Magnitude homology is a bigraded homology theory for finite graphs defined by Hepworth and Willerton, categorifying the power series invariant known as magnitude which was introduced by Leinster. We analyze the structure and implications of torsion in magnitude homology. We show that any finitely generated abelian group may appear as a subgroup of the magnitude homology of a graph, and, in particular, that torsion of a given prime order can appear in the magnitude homology of a graph and that there are infinitely many such graphs. Finally, we provide complete computations of magnitude homology of a class of outerplanar graphs and focus on the ranks of the groups along the main diagonal of magnitude homology. (Received August 30, 2021)