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Sonica Saraf*, Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA 15213, and **Natalie Wellen**, Department of Mathematical Sciences, Worcester Polytechnic Institute, Worcester, MA 01609. *The Resolution Limit for Detecting Communities in Benchmark Graphs*. Preliminary report.

Detecting community structure within networks is important in a variety of practical applications including social networks, biological networks, technological networks, and many more. Modularity optimization is a popular method for detecting communities of nodes within networks. It was shown by Fortunato and Barthelemy that modularity optimization is subject to a resolution limit wherein communities smaller than a certain size cannot be detected. In this talk, we will examine the resolution limit for certain classes of benchmark graphs, and discuss how the inclusion of a multi-resolution parameter affects the ability to detect communities. (Received August 07, 2015)