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Tyler Seacrest* (tyler.seacrest@umwestern.edu). *Measuring expansion: the second neighborhood conjecture and related problems.*

There is a series of well-known and fiendishly difficult conjectures related to the expansion of successive neighborhoods of a vertex. For example, Paul Seymour's second neighborhood conjecture states that for a digraph without loops or two-cycles, there exists a vertex such that the number of vertices at distance two is at least the number of vertices at distance one. We will survey the second neighborhood conjecture and related conjectures, as well as some of the very innovative attempts to make progress on them. We will end with some of our own approaches and results. (Received February 13, 2021)