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Shaun M Fallat* (shaun.fallat@uregina.ca), Department of Mathematics and Statistics, University of Regina, Regina, Sask. S4N 5C3, Canada. *Graphs requiring many distinct eigenvalues.*

A celebrated result for M. Feidler ('69) stated that the path is the only connected graph G on n vertices for which all symmetric matrices, whose entries are governed by the adjacency in G , are required to have n distinct eigenvalues.

Building upon ideas from Colin de Verdière concerning the maximum nullity of certain generalized Laplacian matrices associated with a graph, we develop two generalizations with the intention of deriving a better understanding all of the possible spectra (counting multiplicity) for symmetric matrices with a given graph. These ideas are then applied to the minimum number of distinct eigenvalues associated with a graph. (Received January 28, 2019)