

1099-05-124

**Evans M Harrell\*** ([harrell@math.gatech.edu](mailto:harrell@math.gatech.edu)), School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0160, and **Joachim Stubbe**. *Sums of eigenvalues of graphs.*

We consider the spectra of three self-adjoint matrices associated with a combinatorial graph, viz., the adjacency matrix  $A$ , the graph Laplacian  $H = -\Delta$ , and the normalized graph Laplacian  $L$ . Using an averaged variational techniques we obtain sharp bounds on sums and the statistical distribution of the lowest  $k$  eigenvalues eigenvalues of these operators, and relate them to the structure of the graph. (Received February 04, 2014)