1022-05-129 **Vladimir Nikiforov*** (vnikifrv@memphis.edu), 373 Dunn Hall, Dept of Math Sicences, University of Memphis, Memphis, TN 38152. *A spectral approach to classical extremal graph theory.*

In a somewhat narrow sense classical extremal graph theory studies the clique number and the number of cliques of graphs. In the past decades gradually it became clear that these parameters are closely related to graph eigenvalues and that the relations are surprisingly rich and deep. For instance, very recently Bela Bollobas and the author showed that the celebrated Turan's theorem is equivalent to a certain bound on the spectral radius of a graph. We shall also present other subtle recent results relating the clique number of a graph to its smallest eigenvalue, and to the largest eigenvalue of its Laplacian.

Likewise, we shall show that the number of cliques of a graph can be bounded below in terms of its order and spectral radius. Moreover, there are recent bounds on the smallest adjacency eigenvalue and on the largest Laplacian eigenvalue in terms of the number of vertices, edges, and triangles of a graph.

Generally speaking all these bounds are precise for regular complete multipartite graphs; the fascinating thing is that linear and quadratic combinations of two or more eigenvalues may provide precise approximations in wider classes of graphs.

Finally some open problems will be stated. (Received September 11, 2006)