ELA

http://math.technion.ac.il/iic/ela

THE SPECTRUM OF THE EDGE CORONA OF TWO GRAPHS[*]

YAOPING HOU[†] AND WAI-CHEE SHIU[‡]

Abstract. Given two graphs G_1, with vertices $1, 2, ..., n$ and edges $e_1, e_2, ..., e_m$, and G_2, the edge corona $G_1 \diamond G_2$ of G_1 and G_2 is defined as the graph obtained by taking m copies of G_2 and for each edge $e_k = ij$ of G, joining edges between the two end-vertices i, j of e_k and each vertex of the k-copy of G_2. In this paper, the adjacency spectrum and Laplacian spectrum of $G_1 \diamond G_2$ are given in terms of the spectrum and Laplacian spectrum of G_1 and G_2, respectively. As an application of these results, the number of spanning trees of the edge corona is also considered.

Key words. Spectrum, Adjacency matrix, Laplacian matrix, Corona of graphs.

AMS subject classifications. 05C05, 05C50.