SIGNED GRAPHS WITH SMALL POSITIVE INDEX OF INERTIA

GUIHAI YU¹, LIHUA FENG‡, AND HUI QU§

Abstract. In this paper, the signed graphs with one positive eigenvalue are characterized, and the signed graphs with pendant vertices having exactly two positive eigenvalues are determined. As a consequence, the signed trees, the signed unicyclic graphs and the signed bicyclic graphs having one or two positive eigenvalues are characterized.

Key words. Signed graph, Adjacency matrix, Positive index of inertia.

AMS subject classifications. 05C50, 05C20, 05C75.

¹Department of Mathematics, Shandong Institute of Business and Technology, Yantai, Shandong, 264005, China, and Center for Combinatorics and LPMC-TJKLC, Nankai University, Tianjin, 300071, China (yuguihai@126.com). Supported by Natural Science Foundation of China (no. 11301302 and no. 61202362), China Postdoctoral Science Foundation (no. 2013M530869 and no. 2014T07210), and the Natural Science Foundation of Shandong (no. BS2013SF009).

‡School of Mathematics and Statistics, Central South University, New Campus, Changsha, Hunan, 410083, China (fenglh@163.com). Supported in part by Natural Science Foundation of China (no. 11271208), and Mathematics and Interdisciplinary Sciences Project of CSU.

§Department of Mathematics, Shandong Institute of Business and Technology, Yantai, Shandong, 264005, China (quhui781111@126.com).