Electronic Journal of Linear Algebra ISSN 1081-3810
A publication of the International Linear Algebra Society
Volume 18, pp. 773-783, December 2009

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

DISJOINT UNIONS OF COMPLETE GRAPHS CHARACTERIZED BY THEIR LAPLACIAN SPECTRUM*

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Abstract. A disjoint union of complete graphs is in general not determined by its Laplacian spectrum. It is shown in this paper that if one only considers the family of graphs without isolated vertex, then a disjoint union of complete graphs is determined by its Laplacian spectrum within this family. Moreover, it is shown that the disjoint union of two complete graphs with a and b vertices, $\frac{a}{b} > \frac{5}{3}$ and $b > 1$ is determined by its Laplacian spectrum. A counter-example is given when $\frac{a}{b} = \frac{5}{3}$.

Key words. Graphs, Laplacian, Complete graph, Graph determined by its spectrum, Strongly regular graph.

AMS subject classifications. 05C50, 68R10.

* Received by the editors February 11, 2009. Accepted for publication December 4, 2009. Handling Editor: Miroslav Fiedler.

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