Inclusion Relations of Certain Graph Eigenspaces

Torsten Sander

Institut für Mathematik
Technische Universität Clausthal
D-38678 Clausthal-Zellerfeld, Germany
e-mail: torsten.sander@math.tu-clausthal.de

Abstract
Motivated by the fact that there exists an inclusion relation between the eigenspace for eigenvalue $\lambda$ of a graph and the eigenspace for eigenvalue $-1 - \lambda$ of its complement, one may ask if for some given $\lambda$ there exist graph classes such that the direction of this inclusion is the same for all its members. The main result of this paper is that the eigenspace for eigenvalue 0 of a tree always contains the eigenspace for eigenvalue $-1$ of its complement.

Keywords: tree, complement, kernel, eigenspace

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