

THE DISTANCE MATRIX OF A BIDIRECTED TREE*

R. B. BAPAT[†], A. K. LAL[‡], AND SUKANTA PATI[§]

Abstract. A bidirected tree is a tree in which each edge is replaced by two arcs in either direction. Formulas are obtained for the determinant and the inverse of a bidirected tree, generalizing well-known formulas in the literature.

Key words. Tree, Distance matrix, Laplacian matrix, Determinant, Block matrix.

AMS subject classifications. 05C50, 15A15.

 $^{^{\}ast}$ Received by the editors May 18, 2008. Accepted for publication April 10, 2009. Handling Editor: Bryan L. Shader.

 $^{^\}dagger Stat-Math$ Unit, Indian Statistical Institute Delhi, 7-SJSS Marg, New Delhi - 110 016, India (rbb@isid.ac.in).

[‡]Indian Institute of Technology Kanpur, Kanpur - 208 016, India (arlal@iitk.ac.in).

[§]Department of Mathematics, Indian Institute of Technology, Guwahati, India (sukanta_pati@yahoo.co.in).