Electronic Journal of Linear Algebra ISSN 1081-3810
A publication of the International Linear Algebra Society
Volume 16, pp. 334-346, October 2007

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

COMBINATORIAL PROPERTIES OF FOURIER-MOTZKIN ELIMINATION*

GEIR DAHL†

Abstract. Fourier-Motzkin elimination is a classical method for solving linear inequalities in which one variable is eliminated in each iteration. This method is considered here as a matrix operation and properties of this operation are established. In particular, the focus is on situations where this matrix operation preserves combinatorial matrices (defined here as $(0, 1, -1)$-matrices).

Key words. Linear inequalities, Fourier-Motzkin elimination, Network matrices.

AMS subject classifications. 05C50, 15A39, 90C27.

*Received by the editors 10 March 2005. Accepted for publication 23 September 2007. Handling Editor: Bryan L. Shader.

†Centre of Mathematics for Applications, and Dept. of Informatics, University of Oslo, P.O. Box 1053 Blindern, NO-0316 Oslo, NORWAY (geird@math.uio.no).