The Electronic Journal of Linear Algebra.
A publication of the International Linear Algebra Society.
Volume 5, pp. 24-38, February 1999.
ISSN 1081-3810. http://math.technion.ac.il/iic/ela

ELA

COMPARISON THEOREMS FOR WEAK NONNEGATIVE SPLITTINGS OF K-MONOTONE MATRICES*

JOAN-JOSEP CLIMENT† AND CARMEN PEREA‡

Abstract. The comparison of the asymptotic rates of convergence of two iteration matrices induced by two splittings of the same matrix has arisen in the works of many authors. In this paper new comparison theorems for weak nonnegative splittings of K-monotone matrices are derived which extend some results on regular splittings by Csordas and Varga (1984) for weak nonnegative splittings of the same or different types.

Key words. nonsingular matrix, iterative methods, spectral radius, proper cone, K-nonnegative matrix, K-monotone matrix, comparison conditions, weak nonnegative splitting.

AMS subject classification. 65J10

*Received by the editors on 26 September 1997. Accepted for publication on 10 February 1999. Handling Editor: Daniel B. Szyld.

†Departament de Ciència de la Computació i Intel·ligència Artificial. Universitat d'Alacant. Ap. 99 E–03080 Alacant, Spain (jcliment@ua.es). The work of this author was partially supported by Spanish DGES grant PB97-0334.

‡Departamento de Estadística y Matemática Aplicada. Universidad Miguel Hernández. Escuela Politécnica Superior. E-03550, Orihuela, Spain (perea@umh.es).