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SYMMETRIC NONNEGATIVE REALIZATION OF SPECTRA*

RICARDO L. SOTO†, OSCAR ROJO†, JULIO MORO‡, AND ALBERTO BOROBIA§

Abstract. A perturbation result, due to R. Rado and presented by H. Perfect in 1955, shows how to modify r eigenvalues of a matrix of order n, $r \leq n$, via a perturbation of rank r, without changing any of the $n - r$ remaining eigenvalues. This result extended a previous one, due to Brauer, on perturbations of rank $r = 1$. Both results have been exploited in connection with the nonnegative inverse eigenvalue problem. In this paper a symmetric version of Rado's extension is given, which allows us to obtain a new, more general, sufficient condition for the existence of symmetric nonnegative matrices with prescribed spectrum.

Key words. Symmetric nonnegative inverse eigenvalue problem.

AMS subject classifications. 15A18, 15A51.

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†Departamento de Matemáticas, Universidad Católica del Norte, Antofagasta, Casilla 1280, Chile (rsoto@ucn.cl, orojo@ucn.cl). Supported by Fondecyt 1050026, Fondecyt 1040218 and Mecesup UCN0202, Chile.

‡Departamento de Matemáticas, Universidad Carlos III de Madrid, 28911–Leganés, Spain (jmoro@math.uc3m.es). Supported by the Spanish Ministerio de Ciencia y Tecnología through grant BFM-2003-00223.

§Departamento de Matemáticas, UNED, Madrid, Senda del Rey s/n., 28040 – Madrid, Spain (aborobia@mat.uned.es).