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NONNEGATIVE REALIZATION OF COMPLEX SPECTRA*

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Abstract. We consider a list of complex numbers $\Lambda = \{\lambda_1, \lambda_2, \ldots, \lambda_n\}$ and give a simple and efficient sufficient condition for the existence of an $n \times n$ nonnegative matrix with spectrum Λ. Our result extends a previous one for a list of real numbers given in [*Linear Algebra Appl.*, 416:844–856, 2006]. In particular, we show how to construct a nonnegative matrix with prescribed complex eigenvalues and diagonal entries. As a by-product, we also construct Hermitian matrices with prescribed spectrum, whose entries have nonnegative real parts.

Key words. Nonnegative inverse eigenvalue problem.

AMS subject classifications. 15A18.

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