

Symmetric nonnegative matrices

Thomas J. Laffey, University College Dublin, Ireland

We say that a list σ of n complex numbers is *realizable* if it is the spectrum of an entry-wise nonnegative $n \times n$ matrix A , and we say that σ is *symmetrically realizable* if A can be chosen to be symmetric.

Many results are available in the literature describing ways of perturbing and combining realizable spectra while preserving realizability. We consider the corresponding problems for symmetric realizability, and, in particular, we will discuss the symmetric analogues of results of Brauer, Fiedler, Smigoc and Guo Wuwen.

We will also discuss the current status of the general problem of characterizing nonnegative symmetric matrices via their spectra.