1163-15-431 **Pietro Paparella*** (`pietrop@uw.edu`), 18115 Campus Way NE, Bothell, WA 98011-8246. *Perron similarities and the nonnegative inverse eigenvalue problem.*

The *nonnegative inverse eigenvalue problem (NIEP)* is to determine which multisets of n complex numbers occur as the eigenvalues of some n-by-n entry-wise nonnegative matrix.

An invertible matrix S is called a *Perron similarity* if there is a non-scalar diagonal matrix D such that SDS^{-1} is entry-wise nonnegative. Each Perron similarity gives a cone, called its *spectracone*, of NIEP-realizable spectra (thought of as vectors in $\mathbb{C}^n$). Of course, the union of these spectracones is the solution of the DNIEP. By considering the spectracones that come from the Perron similarities associated with certain realizations of the Karpelevič arcs, large portions of NIEP-realizable spectra are generated for a given n. Further results concerning the theory of complex Perron similarities for the diagonalizable NIEP (DNIEP) are discussed along with implications for further research.

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