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**Charles Johnson\*** (crjohn@wm.edu). *The Nonnegative Single Inverse Eigenvalue Problem for Row Stochastic and Doubly Stochastic Matrices.*

The Nonnegative Inverse Eigenvalue Problem (NIEP) asks which spectra occur for  $n$ -by- $n$  nonnegative (equivalently, row stochastic matrices). In celebrated work, Karpelevich described all possible complex numbers that can be a single eigenvalue of a row stochastic matrix. However, the description is not entirely explicit. The corresponding, more restrictive, problem for doubly stochastic matrices is still open. Here, we give a highly explicit description of the Karpelevich region and some new ideas stemming from recent work about the doubly stochastic problem. (Received September 20, 2016)