EIGENVECTORS FROM EIGENVALUES: A SURVEY OF A BASIC IDENTITY IN LINEAR ALGEBRA

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Abstract

This paper is dedicated to a laconic and basic fact from linear algebra connecting the eigenvalues of matrix and its diagonal minors with absolute values of its eigenvectors. The equality has been presented and proved in several prior papers of different authors; however, for some reasons only in few of them this equality was stated explicitly and in the same way as in this work; moreover, none of the authors of previous works even gave the equation a name. This survey collects many proofs of the fact (grown from diverse scientific subjects such as physics of neutrino, random matrices, walks in directed graphs, Hilbert operator theory, etc.), offers it a name "*eigenvector-eigenvalue identity*" and contains some additional consideration, starting with the practical applicability and finishing with possible reasons of its very limited dissemination.