EVALUATING SCIENTIFIC PRODUCTS BY MEANS OF CITATION-BASED MODELS: A FIRST ANALYSIS AND VALIDATION*

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Dedicated to Gérard Meurant on the occasion of his 60th birthday

Abstract. Some integrated models for ranking scientific publications together with authors and journals are presented and analyzed. The models rely on certain adjacency matrices obtained from the relationships between citations, authors and publications, which together give a suitable irreducible stochastic matrix whose Perron vector provides the ranking. Some perturbation theorems concerning the Perron vectors of nonnegative irreducible matrices are proved. These theoretical results provide a validation of the consistency and effectiveness of our models. Several examples are reported together with some results obtained on a real set of data.

Key words. Page rank, Perron vector, perturbation results, impact factor

AMS subject classifications. 65F15

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