Computer Science > Information Retrieval

Google matrix and Ulam networks of intermittency maps

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We study the properties of the Google matrix of an Ulam network generated by intermittency maps. This network is created by the Ulam method which gives a matrix approximant for the Perron-Frobenius operator of dynamical map. The spectral properties of eigenvalues and eigenvectors of this matrix are analyzed. We show that the PageRank of the system is characterized by a power law decay with the exponent β dependent on map parameters and the Google damping factor α. Under certain conditions the PageRank is completely delocalized so that the Google search in such a situation becomes inefficient.

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