Condensed Matter > Disordered Systems and Neural Networks

Towards Google matrix of brain

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We apply the approach of the Google matrix, used in computer science and World Wide Web, to description of properties of neuronal networks. The Google matrix ${\bf G}$ is constructed on the basis of neuronal network of a brain model discussed in PNAS {\bf 105}, 3593 (2008). We show that the spectrum of eigenvalues of ${\bf G}$ has a gapless structure with long living relaxation modes. The PageRank of the network becomes delocalized for certain values of the Google damping factor α. The properties of other eigenstates are also analyzed. We discuss further parallels and similarities between the World Wide Web and neuronal networks.

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