Effect of a Superuser on the Pansophy of a Network

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In 2017, Boats and Kikas introduced a new parameter, the pansophy of a graph, which is the expected value of the number of disjointly-routable paths in a graph given a random distribution of starting and stopping points. The pansophy of a graph is the best possible performance of a routing algorithm in a communication network, and can be used in comparison as a measurement of routing efficiency. In this paper we investigate the effect of adding a "superuser" to a graph, i.e. consider the join of one vertex with the original graph. We examine the graph classes K_n, C_n, and P_n, and suggest bounds on the change in pansophy for a simple, connected graph in general.

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