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Connectivity for adjacency matrices and vertex-minors

Standard notions of graph connectivity do not translate well to its adjacency matrix (i.e. the complete bipartite graph is highly vertex- and edge-connected, but its adjacency matrix has rank 2). The cut-rank function addresses this issue and is very closely related to vertex-minors. We will discuss the “connectivity” issues that come up when forbidding a vertex-minor. Essentially, we characterize when the “connectivity” of many disjoint sets can be decreased by adding a low-rank matrix (over the binary field). Joint work with Jim Geelen and Paul Wollan.