The excluded minors for matroids that are binary or ternary

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A matroid is a structure that abstracts the notion of linear independence. In particular, every matrix with entries from a field gives rise to a matroid. If the matrix contains entries from the two- or three-element field, then the corresponding matroid is said to be binary or ternary, respectively.

The submatroids contained in a matroid are known as its minors. A class of matroids is minor-closed if, whenever a matroid is contained in the class, so are all its minors.

Minor-closed classes can be characterized by their excluded minors. An excluded minor is not contained in the class, but all its proper minors are. The classes of binary and ternary matroids are minor-closed, and their excluded-minor characterizations are amongst the best-known results in matroid theory. The set of matroids that are either binary or ternary is also minor-closed. We give an excluded-minor characterization of this class.

No knowledge of matroid theory will be assumed.