

Base-Orderability in Matroids

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Abstract

We begin with an introduction to basis-exchange properties of matroids. We review the two well-known minor-closed classes of base-orderable and strongly base-orderable matroids. To illustrate, all transversal matroids are strongly base-orderable, and a binary matroid is base-orderable if and only if it has no $M(K_4)$ -minor. We also discuss a notion, which we term k -base-orderability, that lies in between base-orderability and strong base-orderability but that has received almost no attention. – Ingleton gave an example of a matroid that is base-orderable, but not strongly base-orderable. By generalizing his construction, we are able to show there exist infinitely many excluded-minors for the class of strongly base-orderable matroids that are themselves base-orderable.

Keywords: matroid, minor-closure, k -base-orderability.