

The Free Cone and its relation to matroid invariants

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Abstract

The G -invariant is a matroid invariant that determines the Tutte polynomial, and is of particular interest due to its universality among valuative invariants of matroids. Given a matroid M , we define a new matroid construction called the *free cone* of M , and prove that its G -invariant is determined by the G -invariant of M . We also look at the configuration, a matroid invariant that determines the G -invariant, and prove that the configuration of the free cone of M determines M .

Keywords: matroid, Tutte polynomial, free cone of a matroid.