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Joseph Kung* (kung@unt.edu). *Syzygies on Tutte polynomials of freedom matroids.*

It follows from work of Derksen and Derksen and Fink that the Tutte polynomial of a matroid is “naturally” a linear combination of Tutte polynomials of freedom matroids. However, Tutte polynomials of freedom matroids are not a basis; rather, they are a “spark-6 frame”. We find a generating set for all linear relations on Tutte polynomials of freedom matroids. Linear relations in this generating set are indexed by two intervals, one of height 1 and the other of height 2, in the weak order on freedom matroids. The weak order is isomorphic to an interval of Young’s partition lattice. We will also discuss the relation between the CATenary data of a matroid and its \mathcal{G} -invariant. (Received August 26, 2015)