On the algebraic complexity of colored Tutte polynomials

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We investigate the colored Tutte polynomial in Valiant’s algebraic framework of NP-completeness. Generalizing the well known relationship between the Tutte polynomial and the partition function from statistical mechanics, we establish a reduction from the permanent to the colored Tutte polynomial, thus showing that its evaluation is a VNP-complete problem. We also report about related work on the complexity of generating functions and of graph and knot polynomials.