

# Irreducibility of the Tutte Polynomial of a Connected Matroid

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(joint work with Criel Merino and Anna de Mier)

If  $M$  is a matroid, let  $T(M)$  be the Tutte polynomial of  $M$ . If  $M$  is the direct sum of two matroids  $N$  and  $P$ , then  $T(M) = T(N) * T(P)$ . Hence if  $M$  is not connected, then its Tutte polynomial has non-trivial factors. In 1972 Brylawski conjectured the converse statement, namely, that if  $M$  is connected then  $T(M)$  is irreducible over the integers. In this paper we prove the truth of this conjecture. Our main tool is a set of linear identities satisfied by the coefficients of the Tutte polynomial of any matroid.