

The two-variable Bollobás–Riordan polynomial of a connected even delta-matroid is irreducible

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One of the most striking results concerning the Tutte polynomial is that the Tutte polynomial of a matroid is irreducible if and only if the matroid is connected.

The most natural analogue of the Tutte polynomial for an even delta-matroid is perhaps a normalized two variable specialization

$$(x-1)^{w(D)/2} R_D(x, y-1, 1/\sqrt{(x-1)(y-1)}, 1)$$

of the Bollobás–Riordan polynomial. We show that for even delta-matroids this two-variable Bollobás–Riordan polynomial is irreducible if and only if the delta-matroid is connected.