

1037-05-360

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Chromatic, Flow, and Tutte Polynomial Unique Graphs and Coefficients of the Characteristic Polynomial of a Binary Matroid. Preliminary report.

The chromatic polynomial and flow polynomial of a graph are two important evaluations of its Tutte polynomial. Much research has been done on graphs determined entirely by their chromatic polynomials and Tutte polynomials, respectively. We show that several classes of graphs, ladders, Möbius ladders and squares of cycles are determined by their chromatic polynomial and flow polynomial together. A direct consequence of our theorem is a result of de Mier and Noy that these classes of graphs are Tutte polynomial unique. We also prove that twisted wheels are Tutte polynomial unique. Finally, we prove a new result on the coefficients of the characteristic polynomial of a binary matroid. This is joint work with Loni Delaplane, Yinghua Duan, and Qinglin Yu. (Received February 05, 2008)