

U-polynomial, Thickets, Electrical networks and Statistical optimalities

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Problem 1 *Given m vertices and n edges, construct a graph with minimal number of cocycles and maximal number of spanning trees. (Construct a matroid on n elements with minimal number of cocircuits and maximal number of bases)*

The object of this talk is to explain the motivation behind this problem and show some possible avenues of research.

One way of counting cocycles is given by the U-polynomial defined by Noble and Welsh. Part of the talk would present this polynomial and explain its importance in trying to solve the cocircuit-basis problem.