

## Jack Graver

---

# You May Rely on the Reliability Polynomial for Much More Than You Might Expect

---

Abstract for the Colloquium November 18, 1999

---

The reliability polynomial  $R_S(p)$  of a collection  $S$  of subsets of a finite set  $X$  has been extensively studied in the context of network theory. Here  $X$  is the edge set of a graph  $(V, X)$  and  $S$  the collection of the edge sets of certain subgraphs, for example, the spanning trees. In that case,  $R_S(p)$  is the probability that, when each edge is included with the probability  $p$ , the resulting subgraph is connected. Demonstrating that the information about a collection  $S$  encoded in the coefficients of  $R_S(p)$  may be capitalized upon in a variety of other probability and combinatorial settings is the main purpose of this talk.

To any collection of subsets  $S$ , we may associate  $b(S)$ , the collection of minimal sets which meet each set in  $S$ . For the collections of interest to us, this is a duality operator:  $b(b(S))=S$ . Of particular interest are the self-blocking collections:  $b(S)=S$ . We illustrate the expanded use of the reliability polynomials to study these self-blocking collections.

From:

<https://www2.math.binghamton.edu/> - **Binghamton University Department of Mathematical Sciences**

Permanent link:

<https://www2.math.binghamton.edu/p/seminars/comb/abstract.19991118coll>

Last update: **2020/01/29 19:03**

