

# Graph Theory and Polynomial Interpolation.

Michael Monagan

Department of Mathematics, Simon Fraser University.

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Abstract:

These are two Maple projects we are working on at SFU. I will first present current work on the GraphTheory package: to graph isomorphism, graph drawing, and computing Tutte polynomials. I will show you why Tutte polynomials are of interest. I am also thinking about extending the package to handle multi-graphs.

Secondly, I will present work done with Mahdi Javadi on interpolating sparse polynomials and present some parallel benchmarks comparing it with Zippel's algorithm. This has the potential to dramatically speed up polynomial GCD computation. Currently we are implementing another method, a factor of  $d$  faster still, but which will require 63 bit primes for larger problems. This has motivated us to start extending the zppoly library for arithmetic in  $\mathbb{Z}_p[x]$  to 63 bit primes.