CORNELL MATH CLUB PRESENTS:

Prof. Allen Knutson, “Symmetric and Less-Symmetric Polynomials”

Abstract: A symmetric polynomial is one that doesn't change if you permute its variables, e.g. $x+y$, xy, x^2+y^2+7xy. A classic theorem states that any symmetric polynomial is itself expressible (uniquely!) as a polynomial in the ”elementary symmetric polynomials”. This is usually a much more compact description than writing it as a sum of monomials.

What if the polynomial is only symmetric under certain changes $x_i \leftrightarrow x_{i+1}$? There turns out to be an awesome basis of the ring of all polynomials in infinitely many variables, the ”Schubert polynomials,” that is particularly efficient for describing partially symmetric polynomials. I'll explain these, and give a formula for them as a sum over ”pipe dreams”. Time permitting, I'll explain the geometry that motivates this particular choice of basis.

Monday, November 2nd, 4:30 – 6:00 P.M.

Malott 5th floor lounge

Refreshments will be served