The George Washington University Combinatorics Seminar

Wednesday, December 3, 2008, 4:15 - 5:15 p.m.

Monroe Hall, Room 267
2115 G Street, N.W., Washington, D.C.

Rational representations of flowers

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A *flower* is an embedding of the wheel graph in the Euclidean plane as a coin graph. In a given flower with n petals, the radii of the petals satisfy an algebraic equation, that we show is equivalent to a polynomial equation $P_n = 0$, where $P_n \in \mathbb{Q}[x_1, \ldots, x_n]$ is irreducible. We will explore the properties of these polynomials and what they can tell us about the underlying graphs. In particular one might ask: when can we realize these flowers using all rational radii? The case where the number of petals of the flower is 3 has a nice solution. In the case where $n \geq 4$ only partial answers are known.