Michelle Rabideau* (rabideau@hartford.edu) and Ralf Schiffler. Orderings on the Markov numbers.

A Markov number is a number in the triple \((x, y, z)\) of positive integer solutions to the Diophantine equation \(x^2 + y^2 + z^2 = 3xyz\). Markov numbers are a classical topic in number theory related to many areas of mathematics such as cluster algebras and combinatorics. Markov numbers are related to cluster algebras by Markov snake graphs, where a Markov snake graph is the snake graph of a cluster variable of the once punctured torus. The number of perfect matchings of a Markov snake graph, given by the numerator of the associated continued fraction, is a Markov number. In this talk, we discuss a conjecture given in Martin Aigner's book, Markov's theorem and 100 years of the uniqueness conjecture that determines an ordering on subsets of the Markov numbers based on their corresponding rational. The proof uses the cluster algebra of the torus with one puncture and a resulting reformulation of the conjecture in terms of continued fractions. (Received February 04, 2019)