David de Boer (University of Amsterdam):
Friday, June 11th, 10:00-10:45 EDT.

Title: Zeros, chaotic ratios and the computational complexity of approximating the independence polynomial

Abstract: The independence polynomial originates in statistical physics as the partition function of the hard-core model. The location of the complex zeros of the polynomial is related to phase transitions, and plays an important role in the design of efficient algorithms to approximately compute evaluations of the polynomial. In this talk I relate the location of zeros to chaotic behaviour of a naturally associated family of rational functions; the occupation ratios. I show the closure of the complex zeros is exactly the non-normality region of this family of rational functions and I describe how this is related with the complexity of approximating evaluations of the polynomial. This talk is based on an article with the same name, which is joint work with Pjotr Buys, Lorenzo Guerini, Han Peters and Guus Regts.