Colloquium

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Minimal Zeros of Optimal Polynomial Approximants Revisited, and Consequences for the Shanks Conjecture

Friday, October 18, 2024
3:00 p.m. in Massry BB-012
(tea & coffee at 2:45 p.m.)

ABSTRACT. In the last decade, there has been a lot of work on optimal polynomial approximants, which are polynomials that indirectly approximate inverses of analytic function in various Hilbert or Banach spaces. In this talk, I will revisit some known work related to minimal zeros of optimal polynomial approximants in certain weighted Hilbert spaces of the disk. This problem is connected to orthogonal polynomials on the real line, Jacobi matrices, and some particular differential equations. It turns out that it also has implications for the weak Shanks Conjecture, which relates to the location of zeros of certain least square inverse polynomials of several variables. I will examine all these connections and conclude with what can be said about the Shanks Conjecture.