

THE DEPARTMENT OF MATHEMATICAL SCIENCES

Indiana University - Purdue University Fort Wayne

is pleased to present

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University of Oregon

Spurious poles in Padé approximation of algebraic functions

Abstract

Padé approximants (PAs) are rational functions that interpolate a given holomorphic function at one point with maximal order. They were introduced by Hermite in connection with transcendental number theory and later studied by his student Padé on their own right. PAs are rational approximants with free poles; that is, one does not prescribe the location of the poles but rather obtains the coefficients of the polynomials forming Padé approximant as a solution of a linear system involving Fourier coefficients of the approximated functions. Hence, PAs are easy to construct but their convergence properties are not as transparent. While most of the poles exhibit structured behavior (to be explained) some of them behave erratically wandering all over the complex plane. The latter poles received the name spurious. In my talk I will discuss convergence properties of PAs to different classes of holomorphic functions and explain the presence of the spurious poles in Padé approximation of algebraic functions with finitely many branch points.

Noon, Monday, Feb. 27, 2012.

Location: KT 218

<http://ipfw.edu/departments/coas/depts/math/news/seminars.html>