

# WICHITA STATE UNIVERSITY

Department of Mathematics and Statistics

*The Lecture Series in the  
Mathematical Sciences Presents Our Guest:*

## Dr. Thomas DeLillo

Wichita State University

### “Reflections on Conformal Mapping of Multiply Connected Domains”

Abstract:

In the last few years the speaker and his colleagues, Alan Elcrat (WSU) and John Pfaltzgraff (Chapel Hill), have developed several new formulas for conformal maps from finitely connected domains in the complex plane bounded by circles to domains bounded by polygons or radial or circular slits. The derivations of these (infinite product) formulas are based on the simple idea of continuation of analytic functions by reflection across circular arcs and straight lines. In the case of polygonal boundaries, we obtain generalizations of the classical Schwarz-Christoffel formula. In the case of circular or radial slit boundaries, we obtain explicit formulas for maps to classical canonical domains in P. Koebe's classification of multiply connected domains and for the related Green's functions for the Dirichlet, Neumann, and mixed boundary value problems in the plane.

This talk will give an overview of these results and a discussion of convergence results for the infinite products, progress on numerical implementation (with Toby Driscoll of U. of Delaware), and the relation of these formulas to similar formulas, due to Darren Crowdy and Jonathan Marshall (Imperial College), based on the the classical Schottky-Klein prime function (See the article in Jan/Feb. 2008 issue of SIAM News).

## Friday, February 22, 2008

## 3:00 PM in 372 Jabara Hall

*Please come join us for refreshments before the lecture*

*at 2:30 p.m. in room 353 Jabara Hall.*