

TEMPLE UNIVERSITY MATHEMATICS COLLOQUIUM

Toby Driscoll

University of Delaware

will speak on

Numerical computing with functions

ABSTRACT: Most of what we teach students in early calculus is the manipulation of algebraic expressions. While these manipulations unquestionably made calculus the deep and valuable subject it is today, they are no longer the only legitimate way to apply calculus; in fact, in the area of differential equations, numerical manipulations are the dominant mode of solution. Numerical analysts and approximation theorists implicitly understand the many connections between numerical values and the underlying function objects they represent, but this understanding does not always penetrate into other areas and application domains. The Chebfun project represents a vision and implementation of what it means to compute numerically from a function-centered point of view. By exploiting advanced theory, fast algorithms, and modern programming techniques, key operations such as integration, differentiation, and rootfinding become as straightforward and as accurate as arithmetic on numbers.

MONDAY, DECEMBER 3, 2012

LECTURE AT 4:30 PM

COFFEE, TEA, AND REFRESHMENTS FROM 4:10 PM

ROOM 617, WACHMAN BUILDING

DEPARTMENT OF MATHEMATICS