TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Room 617 Wachman Hall

Wednesday, 21 March 2012, 4:00 p.m.
(tea at 3:45)

Some recent results concerning the field of values (aka numerical range) and its close relatives, the ratio and product fields

by Ilya Spitkovsky

The College of William and Mary

Abstract. The field of values $F(A)$ of a given $n \times n$ matrix A is the image of the unit sphere under the function $f_A : x \to x^* A x$. The function is (obviously) continuous but not one-to-one. We will discuss recent results on the continuity properties of its (multivalued) inverse. Time permitting, we will also touch upon the geometric properties of the ratio and product fields of values. The latter are defined, for pairs (A, B) of matrices, as the images of the unit sphere under the ratio (respectively, product) of f_A and f_B.