IU[B] International University Bremen

Mathematics Colloquium at IUB

Peter Oswald

(IU Bremen)

will speak on

Nonlinear Approximation

Date: **Monday, March 6, 2006**
Time: **17:15**
Place: **Lecture Hall Research II, IUB**

Abstract:

This area of approximation theory deals with the construction and analysis of schemes for replacing objects f from a set K (often a compact set in a linear space X) by objects f_n from a set M_n (usually parametrized by finitely many degrees of freedom) sitting in another linear space Y, where the map

$$f \to f_n$$

is not linear. This situation occurs naturally, e.g., if adaptive schemes for data analysis or for the solution of operator equations are investigated, or if M_n is a manifold different from a linear subspace of Y. Typical questions are the study of the error (distance between f and f_n in some metric) as a function of n (the number of degrees of freedom invested), its comparison with the best approximation of f from M_n, and the comparison with the error rates achievable by linear approximation methods.

As it happens often in nonlinear analysis, progress is made through case studies. In the talk, I will illustrate some of the difficulties and current research activities on two-three examples:

1. Best n-term approximation from basis expansions:
   Greedy coefficient thresholding,
2. Nonlinear multiresolution analysis:
   Convergence, smoothness, stability, and, time permitting,
3. Trigonometric approximation of matrix-valued functions.

Colloquium Tea at ca. 16:45 in the Tea Room of Research II, close to the lecture hall. Everybody is welcome!

M. Stoll