Columbia University
Department of Mathematics
Spring 2008
SAMUEL EILENBERG LECTURES

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Whitney Extension Problems and Interpolation

Abstract:

In this lecture series, we shall answer the following questions:

Fix *m, n* and let *f* be a real-valued function on a subset *E of* R^*n*. How can we decide whether *f* extends to a *C^m* function *F* on the whole of R^*n* ?
If *F* exists, how small can we take its *C^m* norm ?
What can we say about the derivatives of *F* at a given point ? Can we take *F* to depend linearly on *f* ? What if we demand merely that *F* and *f* agree approximatively on *E* ?

Suppose that *E* is finite. Can we compute a nearly optimal *F* ? How many operations does it take ? What if we are allowed to discard a few of the points of *E* ?

Our discussion will be self-contained. In particular, we shall provide the necessary background from Whitney's classical works, Fourier analysis, and computer science.

312 Mathematics Building
Fridays 3:30-5:30 pm
beginning on January 25, 2008