

COLLOQUIUM  
UNIVERSITY OF PITTSBURGH  
FEBRUARY 23, 2007  
704 THACKERAY HALL  
4:00 P.M.

SPEAKER: **PROFESSOR OLOF WIDLUND**

COURANT INSTITUTE

TITLE: **THE ANALYSIS OF DOMAIN DECOMPOSITION  
ALGORITHMS WITH IRREGULAR SUBDOMAINS**

ABSTRACT: The theory for domain decomposition methods often assumes that each subdomain is the union of a small set of coarse triangles or tetrahedra. In this study, we present extensions to the existing theory which accommodates subdomains with much less regular shape. Attention is focused on iterative substructuring methods FETI-DP and BDDC type and as well as overlapping Schwarz preconditioners. So far our results are for two dimensions only. The overall goal is to extend our analytic tools to problems on subdomains that might not even be Lipschitz and to characterize the rates of convergence of our methods in terms of the geometry of the subregions.

The talk will begin by an introduction to domain decomposition methods. They can provide quite fast iterative solvers for the huge system of algebraic equations which arises in large scale finite element applications..