

# On a Parallel Nonoverlapping Domain Decomposition Method

Xuejun Xu

LSEC, Institute of Computational Mathematics,  
Chinese Academy of Sciences, Beijing, China

## Abstract

In recent years, a nonoverlapping domain decomposition iterative procedure, which is based on using Robin-type boundary conditions as information transmission conditions on the subdomain interfaces, has been developed and analyzed. The idea of employing Robin-type boundary conditions as interface conditions was first proposed by P.L. Lions. It is known that the convergence rate of this method is  $1 - O(h)$ , where  $h$  is mesh size. In this talk, the convergence rate will be improved to  $1 - O(h^{1/2}H^{-1/2})$  by choosing suitable parameter on the interfaces, where  $H$  is the subdomain size. Counter examples will be constructed to show that the convergence rate is sharp.