

February 10, 2010

12:30 Paola ANTONIETTI, MOX, Politecnico di Milano, Italy

**A CLASS OF SCHWARZ PRECONDITIONERS FOR THE HP-VERSION OF THE  
DISCONTINUOUS GALERKIN METHOD**

In the hp-version of the finite element method convergence is achieved by a suitable combination of h-refinements (dividing elements into smaller ones) and p-refinements (increasing the polynomial approximation order) It is well known that the discontinuous Galerkin (DG) method easily handles non-conforming/hybrid meshes as well as variable approximation orders, making the DG method well suited for the design of hp-adaptive solution strategies.

In this talk we address the problem of efficiently solving the algebraic linear systems of equations arising from the discretization of a symmetric, elliptic boundary value problem using hp discontinuous Galerkin finite element methods.

We introduce a class of domain decomposition preconditioners based on the Schwarz framework, and prove bounds on the condition number of the resulting iteration operators. Numerical results confirming the theoretical estimates are also presented.