

MULTILEVEL NORMS IN H^{-s}

Thomas Führer

Facultad de Matemáticas, Pontificia Universidad Católica de Chile, Chile
tofuhrrer@mat.uc.cl

In this talk we present basic ideas of the stability proof of multilevel decompositions of piecewise polynomial spaces in negative order Sobolev spaces. We consider sequences of uniform simplicial meshes as well as sequences of adaptively generated meshes. The latter requires a local projection operator in Sobolev spaces of negative order. We discuss its construction together with basic properties and possible applications. We also define multilevel norms that are equivalent to the canonical norms. Applications include the definition of efficient preconditioners for, e.g., boundary integral equations, or residual minimization in fractional order Sobolev spaces.