

BOGOVSKI ESTIMATES AND SOLENOIDAL DIFFERENCE QUOTIENTS

MARTIN KŘEPELA
MICHAEL RŮŽIČKA

DEPARTMENT OF APPLIED MATHEMATICS
UNIVERSITY OF FREIBURG, GERMANY.

ABSTRACT. The Bogovski operator provides a solution to the divergence equation with a particular estimate of its gradient. In the talk, additional properties of the Bogovski solution will be presented, namely an estimate concerning difference quotients of the gradient. This information enables a construction of specific test functions with solenoidal (divergence-free) difference quotients. As an application, one gets a new way to prove interior regularity of the solution to the p -Stokes system. The used proof method relies particularly on the theory of singular integral operators and extrapolation.