

# PARTITION OF UNITY METHOD ON NONMATCHING GRIDS FOR THE STOKES PROBLEM

CONSTANTIN BACUTA, JINRU CHEN, YUNQING HUANG, JINCHAO XU,  
AND LUDMIL T. ZIKATANOV

ABSTRACT. We consider the Stokes Problem on a plane polygonal domain  $\Omega \subset \mathbb{R}^2$ . We propose a finite element method for overlapping or nonmatching grids for the Stokes Problem based on the partition of unity method. We prove that the discrete inf-sup condition holds with a constant independent of the overlapping size of the subdomains. The results are valid for multiple subdomains and any spatial dimension.

MATHEMATICAL SCIENCES, UNIVERSITY OF DELAWARE, NEWARK, DE, 19716  
*E-mail address:* bacuta@math.udel.edu

SCHOOL OF MATHEMATICS AND COMPUTER SCIENCE, NANJING NORMAL UNIVERSITY, NANJING, 210097, P.R.CHINA  
*E-mail address:* jrchen@pine.njnu.edu.cn

INSTITUTE FOR COMPUTATIONAL AND APPLIED MATHEMATICS AND DEPARTMENT OF MATHEMATICS, XIANGTAN UNIVERSITY, PEOPLES REPUBLIC OF CHINA, 411105  
*E-mail address:* huangyq@mail.xtu.edu.cn

DEPT. OF MATHEMATICS, THE PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PA 16802  
*E-mail address:* xu@math.psu.edu

DEPT. OF MATHEMATICS, THE PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PA 16802  
*E-mail address:* ludmil@psu.edu

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