PARTITION OF UNITY METHOD ON
NONMATCHING GRIDS FOR THE STOKES
PROBLEM

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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 con-
dition holds with a constant independent of the overlapping size
of the subdomains. The results are valid for multiple subdomains
and any spatial dimension.

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