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Maxim Olshanskii* (molshan@math.uh.edu). *A finite element method for the Stokes problem posed on a surface.*

We consider a Stokes problem posed on a 2D surface embedded in a 3D domain. The equations describe an equilibrium area-preserving tangential flow of a viscous surface fluid and serve as a model problem in the dynamics of material interfaces. We develop and analyze a Trace finite element method (TraceFEM) for such a surface Stokes problem. TraceFEM relies on finite element spaces defined on a fixed, surface-independent background mesh which consists of shape-regular tetrahedra. Thus, there is no need for surface parametrization or fitting surface with the mesh. The TraceFEM discussed in the talk is based on P1 bulk finite elements for both the velocity and the pressure. (Received January 14, 2018)