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Well-posedness of the Stokes equations on a wedge with Navier-slip boundary conditions

Abstract. We consider the incompressible and stationary Stokes equations on an infinite two-dimensional wedge with non-scaling invariant Navier-slip boundary conditions. The problem is decomposed into a singular expansion near the tip of the wedge (polynomial problem) and a regular problem. To treat the regular problem we introduce a variational formulation of the problem using test functions with higher order derivatives. This enables us to deal with the non-scaling invariant boundary condition. Under the condition that the opening angle of the wedge is small enough, we prove well-posedness and higher regularity of the Stokes problem in a certain class of weighted Sobolev spaces. This is joint work with Marco Bravin, Manuel Gnann, Hans Knüpfer, Nader Masmoudi and Jonas Sauer.