

# Some results on the 3D Stokes eigenvalue problem under Navier boundary conditions

ALESSIO FALOCCHI

Politecnico di Milano

`alessio.falocchi@polimi.it`

We study the Stokes eigenvalue problem under Navier boundary conditions in  $C^{1,1}$ -domains  $\Omega \subset \mathbb{R}^3$ . Differently from the Dirichlet boundary conditions, zero may be the least eigenvalue. We fully characterize the domains where this happens and we show that the ball is the unique domain where the zero eigenvalue is not simple, it has multiplicity three. We apply these results to show the validity/failure of a suitable Poincaré-type inequality. The proofs are obtained by combining analytic and geometric arguments.

This is a joint work with Filippo Gazzola, Politecnico di Milano.