

# Bounded $H^\infty$ -calculus for the hydrostatic Stokes operator

Mathis Gries

*Department of Mathematics, TU Darmstadt, Germany.*

*[gries@mathematik.tu-darmstadt.de](mailto:gries@mathematik.tu-darmstadt.de)*

## Abstract

It is shown that the hydrostatic Stokes operator on  $L^p_\sigma(\Omega)$ , where  $\Omega \subset \mathbb{R}^3$  is a cylindrical domain subject to mixed periodic, Dirichlet and Neumann boundary conditions, admits a bounded  $H^\infty$ -calculus on  $L^p_\sigma(\Omega)$  for  $p \in (1, \infty)$  of  $H^\infty$ -angle 0. In particular, maximal  $L^q - L^p$ -regularity estimates for the linearized primitive equations are obtained.

**Keywords:** primitive equations, maximal regularity, bounded  $H^\infty$ -calculus.