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**Spectral discretization of the time-dependent Stokes problem with mixed boundary conditions.** (English) [Zbl 1479.65005](#)

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Summary: In this paper, we consider the time-dependent Stokes problem in a three-dimensional domain with mixed boundary conditions. The discretization relies on spectral methods with respect to the space variables and Euler's implicit scheme with respect to the time variable, then by the second order BDF method. A detailed numerical analysis leads to a priori error estimates for each numerical scheme.

**MSC:**

- 65M38** Boundary element methods for initial value and initial-boundary value problems involving PDEs
- 65M06** Finite difference methods for initial value and initial-boundary value problems involving PDEs
- 65N38** Boundary element methods for boundary value problems involving PDEs
- 76D07** Stokes and related (Oseen, etc.) flows
- 76M15** Boundary element methods applied to problems in fluid mechanics

**Keywords:**

a priori estimates; BDF scheme; Euler's implicit scheme; mixed boundary conditions; spectral methods; time-dependent Stokes equations

**Full Text:** [DOI](#)