

# Implementation of Schur-complement-preconditioners for the Stokes and Navier-Stokes Equations

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Finite Element discretisation of the Stokes or the linearised Navier-Stokes equations result in block structured systems of linear equations. For these various Schur-complement preconditioners have been proposed, yielding very good performance, see e.g. [1].

In this talk we discuss various implementation issues, which result from attempts to implement these block preconditioners using efficient inexact solution methods for the building blocks of the preconditioners. Especially in the Navier-Stokes setting, it is non-trivial to maintain good scaling as the Reynolds number increases.

Numerical examples demonstrating these issues will be given.

References:

[1] H. Elman, D. Silvester, and A. Wathen. *Finite Elements and Fast Iterative Solvers*. Oxford University Press, 2005.

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