

# Multigrid Preconditioners for the Newton-Krylov Method in the Optimal Control of the Stationary Navier-Stokes Equations

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In this work we construct multigrid preconditioners to be used in the Newton-Krylov method for a distributed optimal control problem constrained by the stationary Navier-Stokes equations. Our approach is to eliminate the state and adjoint variables from the optimality system and to construct efficient preconditioners for the Schur-complement associated with these variables. We show that these preconditioners are of optimal order with respect to the convergence properties of the discrete methods used to solve the Navier-Stokes equations.

This is joint work with Andrei Draganescu.

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