Stabilized FEM for the Stokes problem and an application to optimal control

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We will consider different stabilized finite element methods for the Stokes problem where we mainly focus on lowest order elements. In particular we will discuss different stabilization strategies and we comment on related numerical results. Furthermore the application of stabilized finite elements to related Dirichlet control problems will be presented. Here we consider the maximization of the lift force where the boundary control will be realized either in $L_2(\Gamma)$ or in the energy space $H^{1/2}(\Gamma)$.

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