A posteriori error analysis for the Stokes system with Dirac measures

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The purpose of this work is the design and analysis of a reliable and efficient residual–type a posteriori error estimator for the Stokes equations with a Dirac measure as a forcing term, in the $\mathbf{W}^{1,p}(\Omega) \times \mathrm{L}^p(\Omega)$–norm. To approximate the solution of the problem, we proceed based on the lowest order Taylor–Hood and mini element schemes. On the basis of the devised a posteriori error estimator, we design a simple adaptive strategy that yields optimal rates of convergence for the numerical examples that we perform.