ASYMPTOTIC ANALYSIS OF AN $\varepsilon$-STOKES PROBLEM CONNECTING STOKES AND PRESSURE-POISSON PROBLEMS

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Abstract. In this Note, we prepare an $\varepsilon$-Stokes problem connecting the Stokes problem and the corresponding pressure-Poisson equation using one parameter $\varepsilon > 0$. We prove that the solution to the $\varepsilon$-Stokes problem, convergences as $\varepsilon$ tends to 0 or $\infty$ to the Stokes and pressure-Poisson problem, respectively.