

NUMERICAL APPROXIMATION OF A PSEUDOSTRESS FORMULATION FOR THE STOKES EIGENVALUE PROBLEM

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ABSTRACT. In this work we analyse a finite element approximation of the Stokes eigenvalue problem. We introduce a variational formulation relying only on the pseudostress tensor and propose a discretization by means of the lowest-order Brezzi-Douglas-Marini mixed finite element. However, similar results hold true for other $H(\text{div})$ -conforming elements, like Raviart-Thomas elements. We show that the resulting scheme provides a correct approximation of the spectrum and prove optimal-order error estimates. Finally, we report some numerical tests supporting our theoretical results.

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