

Pénalisation des équations stationnaires de Stokes et Navier-Stokes et applications

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We discuss shape optimization problems associated to the Stokes system. Our analysis includes both topology and boundary variations and it is based on the functional variations approach. It approximates the geometric optimization problem by an optimal control problem that can be solved using gradient algorithms. Numerical examples are also indicated.

Also, we study the penalized steady Navier-Stokes with Neumann boundary conditions system in a holdall domain, its approximation properties (with error estimates) and the uniqueness of the solution that is obtained in a non standard manner. Numerical tests are presented.

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