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Penalized variable viscosity 3D Stokes equations

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SUMMARY

The analysis of the penalized Stokes problem, in its variable viscosity formulation, coupled to convection-diffusion equations is presented in this here. It models the interaction between a highly viscous fluid with variable viscosity and immersed moving and deformable obstacles. Indeed, while it is quite common to couple Poisson equations to diffusion-transport equations in plasma physics or fluid dynamics in vorticity formulations, the study of some complex fluids requires to consider together the Stokes equation in complex moving geometry and convection-diffusion equations.

Keywords: penalization method, porous thin layer, viscous fluid, convection-diffusion equations

AMS Classification:

References

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