

PARAMETER AND DOMAIN-ROBUST PRECONDITIONERS FOR COUPLED MULTIPHYSICS PROBLEMS

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ABSTRACT. Mathematical modeling of the so-called glymphatic system at the macroscale is based on multiphysics systems describing the interaction of the porous media flow and the viscous free flow. Here, interaction of the two subsystems, wide ranges of parameter regimes and importantly also the problem geometry present a difficulty for establishing robust and efficient solution algorithms. Focusing on the coupled Stokes-Darcy system [1, 2] as a model problem we discuss in this talk monolithic and domain decomposition preconditioners which address these challenges.

Keywords: coupled problems, multiphysics, preconditioning

REFERENCES

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