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PARTITIONED FLUID-STRUCTURE INTERACTION ALGORITHMS IN HAEMODYNAMICS

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We consider the fluid-structure interaction problem arising in haemodynamic applications. The finite elasticity equations for the vessel are written in Lagrangian form, while the Navier-Stokes equations for the blood in Arbitrary Lagrangian Eulerian form. The resulting three fields problem (fluid/ structure/ fluid domain) is formalized via the introduction of three Lagrange multipliers and consistently discretized by p-th order backward differentiation formulae (BDFp).

We focus on partitioned algorithms for its numerical solution, which consist in the successive solution of the three subproblems. Due to the strong added mass effect of the fluid on the structure, naive partitioned strategies based on Dirichlet-Neumann type iterations have serious stability limitations. We review several strategies that all rely on the exchange of *Robin* interface conditions which have been shown to greatly reduce the added mass effect.

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