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Validation of an open-source framework for the simulation of blood flow in biomedical devices[1] ANNALISA QUAINI, University of Houston, TIZIANO PASSERINI, Emory University, UMBERTO VILLA, Lawrence Livermore National Laboratory, ALESSANDRO VENEZIANI, Emory University, SUNCICA CANIC, University of Houston — We discuss the validation of an open source framework for the solution of problems arising in hemodynamics. The framework is assessed through experimental data for fluid flow in an idealized medical device with rigid boundaries. The core of the framework is an open source parallel finite element library that features several algorithms for fluid problems. The numerical results for the flow in the idealized medical device are in good quantitative agreement with the measured axial components of the velocity and pressures for flow rates corresponding to laminar, transitional, and turbulent regimes. A detailed account of the methods is provided.

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