Modeling blood flow in a stenosed artery

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The analysis and numerical simulation of complex fluids pose significant challenges, both theoretical and numerical, as well as industrial. The objective of this paper is to propose a stable and robust numerical scheme for modeling blood flow in a stenosed artery. To achieve this, we solve a system composed of the time dependent Incompressible Navier-Stokes equation, and the Oldroyd-B model. Therefore, we seek to numerically solve this system using a *standard* approach and then employing the modular grad-div method. Consequently, the scheme is modified as we compute the velocity in two steps, in order to better figure out the convective term in the transport terms of the Navier-Stokes and Oldroyd-B equations. As a result, every subproblem is easier to solve. The quality of our scheme will be evaluated by the magnitude of the Weissenberg number.

References

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