

Two stable discretizations for Non-Newtonian Flow Models.

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In this talk, we present some stable discretization schemes for solving non-Newtonian flow models. Our method is based on both Discontinuous Galerkin (DG) discretization scheme and a nonconforming discretization scheme. Contrary to the classic finite element discretizations, these discretizations can maintain the exact divergence free of the solution using lower-order polynomial. By these discretizations, the accuracy of the velocity can match the accuracy of the conformation tensor, and hence the accuracy is optimal. Moreover, the robustness of the algorithms has also been demonstrated by the stability analysis using the discrete analogue of energy estimates.

This is joint work with Qingguo Hong and Jinchao Xu.