

A stabilized PGD mixed formulation of the Navier-Stokes equation

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The PGD formulation is extensively applied in different computational domains. Its recent developments target fluid behaviour in Stokes and linear Ericksen flow formulation using Penalty formulation [1,2] or stabilized P1P2 formulations to overcome the LBB condition [3]. In this work, we derive a stabilized PGD formulation for the non-linear Navier-Stokes equation using Galerkin Least Squares including the convective term. The derived formulation is used to solve benchmark problems like the lid-cavity using the PGD domain decomposition for different Reynolds numbers. The obtained solution is stable even using same linear interpolation functions for the velocity and the pressure in all PGD subdomains.

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