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Leo G Rebholz (rebholz@clemsn.edu) and **Camille Zerfas*** (czerfas@clemsn.edu). *The reduced NS- α model of turbulent flow.*

We introduce a new, reduced order NS- α (rNS- α) model for the purpose of efficient, stable and accurate simulations of incompressible flow problems at high Reynolds numbers on coarse meshes. We motivate the new model as an adaptation of the well-known NS- α model that is more efficiently computable, then analyze its well-posedness, treatment of energy, and discuss numerical discretizations. Several numerical tests are given which reveal remarkable coarse-mesh accuracy for turbulent flow simulations. Finally, we examine sensitivity of the models solutions to the filtering radius. (Received September 12, 2016)