

Abstract Submitted
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Empirical and Analytic Generalized Mean Field Model¹ GILEAD TADMOR, Northeastern University, Boston, USA, BERND R. NOACK, OLIVER LEHMANN, Berlin University of Technology, Germany, MAREK MORZYNSKI, Poznan University of Technology, Poland — The generalized mean field model has been introduced by Noack & al. (JFM, 2003) as a critical enabler for very low dimensional Galerkin fluid models of transient dynamics. As originally introduced, it uses a *shift mode* to resolve the global state space direction of natural transient changes in the base flow. Here we highlight a physics interpretation, as a Galerkin representation of the Reynolds stress, and of energy exchanges between fast perturbations and the base flow. We thus explore and compare alternative concepts of local shift modes, including via empirical proper orthogonal decompositions of long and short term base flow transients, and an analytic definition, in terms of the Reynolds equation.

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