

Abstract Submitted
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On POD Galerkin modeling of turbulent shear flows using 'subgrid' turbulence representations¹ BERND R. NOACK, Berlin University of Technology HF1, Germany, LAURENT CORDIER, L.E.M.T.A., 54504 Vandoeuvre-lès-Nancy, France, PIERRE COMTE, Université de Poitiers, France, GILEAD TADMOR, Northeastern University, Boston, USA — Low-dimensional POD Galerkin models are developed from LES data of turbulent shear flows, including mixing layers and jets. The key enablers are 'subgrid' turbulence representations to account for unresolved fine-scale fluctuations in the POD. These auxiliary models improve the prediction horizon and long-term statistics. Different calibration techniques are employed to determine the 'subgrid' parameters, e.g. modal eddy viscosities (Rempfer 1991). These methods range from physical modal balance equation to mathematical optimal control strategies.

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