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Maximum-entropy closure for a Galerkin system of incompressible shear flow[1] BERND R. NOACK, Institut Pprime, Poitiers, France, ROBERT K. NIVEN, The University of New South Wales at ADFA, Canberra, Australia — A statistical physics closure is proposed for Galerkin models of incompressible shear flows. This closure employs a maximum entropy (MaxEnt) principle to infer the probability distribution in Galerkin state space using exact statistical balance equations as side constraints. Application to an empirical Galerkin model of the periodic cylinder wake predicts mean amplitude values and modal energy levels in good agreement with direct numerical simulation. Recipes for more complicated Galerkin systems are provided.

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