Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Sparsity-promoting Dynamic Mode Decomposition[1] MIHAILO JOVANOVIC, University of Minnesota, PETER SCHMID, LadHyX, CNRS/Ecole Polytechnique, France — Dynamic mode decomposition (DMD) represents an effective means for capturing the essential features of numerically or experimentally generated flow fields. In order to strike a balance between the quality of approximation (in the least-squares sense) and the number of modes that are used to approximate the given fields, we develop a sparsity-promoting version of the standard DMD algorithm. This is achieved by combining tools and ideas from convex optimization and the emerging area of compressive sensing. Several examples of flow fields resulting from simulations and experiments are used to illustrate the effectiveness of the developed method.

[1]This work was performed during the 2012 Summer Program at the Center for Turbulence Research with financial support from Stanford University and NASA Ames Research Center.

Mihailo Jovanovic
University of Minnesota

Date submitted: 03 Aug 2012 Electronic form version 1.4