Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Closed-loop turbulence control with machine learning methods[1]
BERND R. NOACK, THOMAS DURIEZ, LAURENT CORDIER, Institute PPRIME, France, MARC SEGOND, MARKUS ABEL, Ambrosys GmbH, Germany, STEVEN BRUNTON, University of Washington, USA, MAREK MORZYNSKI, Poznan University of Technology, Poland, JEAN-CHARLES LAURENTIE, VLADIMIR PAREZANOVIC, JEAN-PAUL BONNET, Institute PPRIME, France
— We propose a machine learning control strategy for arbitrary turbulent flow configurations with finite number of actuators and sensors. This method designs and optimizes closed-loop control laws automatically detecting and exploiting linear to strongly non-linear actuation mechanisms. Presented examples range from a simple analytical model to the TUCOROM mixing layer control demonstrator.

[1]Funding of the ANR Chair of Excellence TUCOROM, of the EC's Marie-Curie ITN program and of Ambrosys GmbH is acknowledged.

Bernd R. Noack
Institute PPRIME, France

Date submitted: 01 Aug 2013 Electronic form version 1.4