

Abstract Submitted  
for the DFD12 Meeting of  
The American Physical Society

**Global Model Reduction for Fluid-Structure System**<sup>1</sup> MINGJUN WEI, MIN XU, TAO YANG, New Mexico State University — There are many challenges in the numerical simulation of a problem involving fluid flow and moving solid structures, especially when fully-coupled motion is considered. The challenge becomes even greater when a reduced-order model is required for the purposes of control and optimization of such complex and coupled systems. Here, we first introduce a global formulation of fluid and solid in a uniform Eulerian framework, which works for both prescribed and coupled moving structures in fluid flow. Based on the same formulation, we propose then to have a global model reduction by applying POD/Galerkin projection on a uniform Eulerian description of fluid, structure and their interaction. Preliminary results are shown as the approach being applied to the cases with either prescribed or coupled motion.

<sup>1</sup>Supported by ARL

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Date submitted: 03 Aug 2012

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