Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

On the interaction of von Karman shedding and sinusoidal actuation KUNIHIKO TAIRA, Florida A&M University/Florida State University — Modifying the dynamics of unsteady separated flow around a bluff body is of engineering importance, as it directly relates to lift and drag on the body. We numerically investigate how the use of sinusoidal flow control input (mimicking synthetic jet actuator) alters the laminar wake dynamics dominated by the von Karman vortex shedding behind a circular cylinder. This study considers the influence of actuator location, forcing amplitude, and forcing frequency, with particular focus on lock-on. Also analyzed is the resulting change in the force experienced by the cylinder to extract useful operating condition for potential applications in feedback control and vibration suppression.

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Date submitted: 09 Aug 2011 Electronic form version 1.4