Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

The dynamics of vortex shedding of flow past a vertical flat plate; LES studies CARLOS VELEZ, MARCEL ILIE, University of Central Florida — Although, apparently flow-induced vibrations represent a canonical problem, a complete understanding of the fluid-structure mechanism of interaction has not yet been achieved. One of the issues associated with flow induced vibrations stems from the vortex shedding phenomenon. It is well known that vortex streets are formed in the wake of bluff bodies over a wide range of Reynolds numbers. The periodic shedding of vortices may result in significant fluctuating loading on the body. When the shedding frequency is close to one of the characteristic frequencies of the body, the resonant oscillations of the body can be excited, causing damaging instabilities. Various studies regarding the vortex shedding resonance or "lock-on" phenomenon have been conducted. However, the effect of Reynolds number on the "lock-on" regime is yet to be fully understood. The "lock-on" phenomenon is of critical importance for the analysis of flow-induced vibration, when the aeroelastic response of the structure is considered. In the present research the influence of sweeping angle on the plate tip vortex formation is studied numerically using large eddy simulation (LES). The results show an increase in magnitude and size of vertical structures developed in the wake of the plate.

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Date submitted: 06 Aug 2010 Electronic form version 1.4