

Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Oblique and Parallel Vortex Shedding in the Wake of a Circular Cylinder at Subcritical Flow Regime ANTRIX JOSHI, TAYFUN AYDIN, ERIC KHOURY, ARMINA ANDRIASIAN, ALIS EKMEKCI — Parallel/oblique shedding of vortices in the wake of a cylinder at subcritical Reynolds numbers are investigated experimentally in a water channel. Experiments involved a cylinder with various combinations of free-surface, channel-floor, endplate boundaries, such as, a free-surface on one end and the channel floor on the other end of the cylinder. The cylinder aspect ratios (L/D) ranged between 12.3 to 13.5. Flow visualization via PIV is conducted along the spanwise flow field on a plane that is tangent to the cylinder surface and is oriented in the free-stream direction. As the vortices are shed behind this plane of visualization from sides of the cylinder, distinct spanwise regions with increased or decreased levels of streamwise velocity contours are alternately induced. These regions can be used to estimate the spanwise orientation of the vortices. Our preliminary results showed an unsteady character in the degree of obliqueness of the shed vortices. Vortices shed out of phase between two neighboring regions of the span led to the formation of dislocations.

Antrix Joshi

Date submitted: 05 Aug 2011

Electronic form version 1.4