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Title DEVELOPMENT OF DATA PROCESSING SOFTWARE FOR PHASE-AVERAGED LDV MEASUREMENTS

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Division EAD	**NAL Project No.** E-1-190
Document No. PD EA 0005	**Date of issue** 28 March 2000

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External Participation

Sponsor AR&DB

Approval Head, Experimental Aerodynamics Division

Remarks --

Keywords Phase-averaging, LDV, Time Series Approach, Circular Cylinder, Vortex Shedding, Drag Reduction

Abstract

This report describes the development, validation and application of software modules for the acquisition, processing and presentation of phase-averaged LDV data. 2-component LDV measurements were carried out in the wake of a 2-D circular cylinder. Data from the counter-processors of LDV were acquired through a high speed DMA card in synchronization with the periodic (sinusoidal) hotwire signals from vortex shedding cycle in the cylinder wake. Ensemble averaging of these data with reference to different phases of the sinusoid was carried out using "time-series approach". The software, written in C, comprises of modules for synchronized data acquisition, periodic signal reconstruction (for generation of *time marks* for different phases), selection of phases and windows for averaging, computation of 2-component phase-averaged velocities and flow field mapping. The routines were validated initially with simulated data and later with LDV and hotwire measurements. Phase-averaged data from 2-component LDV measurements will be used to assess the effectiveness of control devices in reducing the total drag on the cylinder.