

Abstract Submitted  
for the DFD16 Meeting of  
The American Physical Society

**Drag reduction of boat-tailed bluff bodies through transverse grooves. Part I: experiments** ALESSANDRO MARIOTTI, GUIDO BURESTI, MARIA VITTORIA SALVETTI, DICI - University of Pisa — The reduction of the aerodynamic drag of elongated axisymmetric bluff bodies is interesting for several applications. One well-known method to reduce the drag of this type of body is a geometrical modification called boat-tailing, consisting in a gradual reduction of the body cross-section before a sharp-edged base. We combine boat-tailing with properly contoured transverse grooves to further delay boundary-layer separation and reduce drag. The considered geometry is axisymmetric with an elliptical forebody and a cylindrical main body followed by a circular-arc boat-tail. The effectiveness of the contoured grooves was assessed through experiments and simulations. In this talk the experimental investigation is presented. Pressure measurements show that the introduction of a single transverse groove leads to a significant increase of the pressure on the body base and, consequently, to a reduction of drag compared with the boat-tail without the groove. Velocity measurements and flow visualizations highlight that this is due to a delay of flow separation over the boat tail. A steady local recirculation is present inside the groove and downstream its reattachment the boundary layer is thinner and has higher momentum than in the case with no groove, allowing separation to be delayed.

Alessandro Mariotti  
DICI - University of Pisa

Date submitted: 28 Jul 2016

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