

Abstract Submitted
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Drag forces on a bluff body shedding a 2P wake¹ EMAD MASROOR, MARK A. STREMLER, Virginia Tech — We develop analytical expressions for the drag experienced in a uniform flow by a bluff body shedding a 2P wake. Following von Karman's well-known method for the drag experienced by a fixed cylinder with a typical 'von Karman street'-type wake, we set up a potential flow past a general bluff body and model its wake as an infinite periodic collection of point vortices with 4 vortices per period. The relative positions of the 4 vortices are calculated by determining the relative equilibrium configurations of 2P wakes. By considering the momentum flux into and out of a rectangular region enclosing the body and cutting through the wake, we determine the drag forces exerted on the cylinder over one period of vortex shedding. The drag coefficients predicted by this method will be compared to those predicted for objects shedding a standard von Karman street, giving insight into the effect of wake type on the drag.

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