

Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Parametric study of the transition in the wake of oblate spheroids and flat cylinders MARCIN CHRUST, Institute of Fluid and Solid Mechanics, University of Strasbourg, GILLES BOUCHET, Institute of Fluid and Solid Mechanics, University of Strasbourg/CNRS, JAN DUSEK, Institute of Fluid and Solid Mechanics, University of Strasbourg — Recently, the wake of a flat disk has regained the interest of researchers.¹ Simultaneously, some numerical simulations were concerned with cylindrical bodies of finite thickness and showed² that the wakes of such bodies present a different scenario from that of a flat disk and that of a sphere (which is widely known and accepted³). A systematic study covering the whole range of cylinders of aspect ratio (diameter/thickness) between one and infinity as well as a study concerning oblate spheroids which establishes the link between the wake of a sphere and that of an infinitely flat disk, which until now was missing, will be the topic of this communication. The state diagram obtained for oblate spheroids illustrating the transition between the scenario of a sphere wake and that of a flat disk will be presented and discussed.

¹Fabre, Auguste and Magnaudet *Physics of Fluids* 20, 051702 (2008); Meliga, Chomaz and Sipp, *J. Fluid Mech.* 633, 159 (2009)

²Auguste, Fabre and Magnaudet, *Theor. Comput. Fluid Dyn.* 24, 305 (2010)

³Bouchet, Mebarek and Dušek, *Eur. J. Mech. B/Fluids* 25, 321 (2006)

Marcin Chrust
Institute of Fluid and Solid Mechanics, University of Strasbourg

Date submitted: 02 Aug 2010

Electronic form version 1.4