The Forced Motion of a Flag MICHAEL HOWE, College of Engineering, Boston University, AVSHALOM MANELA, Department of Mathematics, MIT — The prevailing view of the dynamics of flapping flags is that the onset of motion is caused by linear instability of the initial planar state. This view is reexamined by considering the forced motion of a flag immersed in a high-Reynolds number flow and subject to vortex shedding from its cylindrical pole. Vortex shedding is represented by a "street" of discrete line vortices released periodically from the pole and convected in the mean wind over the surfaces of the flag. It is found that forced motion is possible when the flag is still temporally stable, which suggests that the present mechanism should be taken into account in future high-Reynolds experimental investigations.

Avshalom Manela
Department of Mathematics, MIT

Date submitted: 29 Sep 2008   Electronic form version 1.4