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**A mathematical model of a “2P mode” vortex wake** ALIREZA SALMANZADEH, PhD Candidate at ESM Department, Virginia Tech, MARK STREMLER, Assistant Prof. of ESM Department, Virginia Tech — The standard von Karman vortex street, also known as the “2S” mode, is the most common vortex configuration to appear in the wake of a bluff body. The next most common configuration is the “2P” mode, in which two pairs of vortices are shed per cycle. We consider a simple model of the “2P” mode consisting of a singly-periodic Hamiltonian system of four point vortices with identical strength magnitudes and zero net strength. An imposed spatial symmetry results in integrable dynamics that depend only on the relative vortex positions. Comparison of our model with a recent experimental result (Schnipper, Andersen, and Bohr, JFM 2009) suggests that this model approach can be used to characterize the experimental vortex motion and estimate the experimental vortex strengths.

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