83. Zvi Artstein and Marshall Slemrod, **The singular perturbation limit of an elastic structure in a rapidly flowing nearly invicid fluid.** Quarterly of Applied Mathematics 59 (2001), 543-555.

Abstract. The effective forces which govern the vertical oscillations of an elastic structure in a horizontally flowing fluid are displayed for the limit case where fluid velocity and viscosity tend to singular limits. The derived singular perturbation model is based on available representations which model the coupled dynamics as coupled oscillators. The fast dynamics of the system does not, in general, converge on the fast time scale to a stationary point, thus the classical singular perturbations methods are not applicable. Rather, a method based on Young measures representation of the fast oscillations, and on averaging, is employed.

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