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Anna Zemlyanova* (azem@math.tamu.edu), Department of Mathematics, Mailstop 336, Texas A&M University, College Station, TX 77843. *A fluid-structure interaction problem for a supercavitating elastic curvilinear foil.*

A problem of a fluid-structure interaction is considered for a curvilinear supercavitating thin elastic foil in a stream of ideal fluid. The Tulin single-spiral-vortex model is used to describe the closure of the cavity. The problem is decoupled with the help of the method of successive approximations. The conformal mapping method together with the Riemann-Hilbert approach is employed for the solution of the fluid mechanics problem. The equations of the thin shell theory are used to describe the deformation of the curvilinear foil. The convergence of the method of successive approximations is investigated. The numerical results including the cavity profile and the displacements of the elastic foil are obtained. (Received August 16, 2011)