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We shall consider a model of flow-structure interaction which consists of perturbed wave equation coupled with a nonlinear plate. The interaction between two media takes place at the edge of the plate. We shall consider both subsonic and supersonic case. It is known that in the latter case the static problem loses ellipticity.

Questions such as existence and uniqueness of finite energy solutions will be addressed first. The final goal is to determine geometric conditions for the configuration which would lead to asymptotic stability. This includes convergence to the equilibria (subsonic case) and existence of global attractors (supersonic case). This latter case presents a challenge of dealing with the system which does not have a gradient structure -in addition to the loss of regularity due to the boundary interaction. Both, spectral analysis, and microlocal analysis will be employed for the proof. (Received September 09, 2011)