1096-35-1233 **Irena Lasiecka*** (lasiecka@memphis.edu). *Long time behavior of flow-structure interaction without mechanical dissipation.*

We consider a PDE model consisting of a nonlinear plate immersed in a flow of gas moving through 3-d space with a supersonic velocity. The latter is described by the so called modified wave equation whose resolvent exhibits the loss of ellipticity.

The goal is to study long time behavior of the resulting interaction. It is shown that structural solutions (solutions to the plate equation) converge asymptotically to an attracting set which is both finite dimensional and smooth. The converge is uniform with respect to the topology induced by finite energy.

In contrast with other works on the subject, the result described holds (i) without imposing any dissipation on the structure and (ii) without assuming an existence of smoothing effects within the structure (such as thermoelasticiy , structural damping or rotational inertia). The proof is based on taking an advantage of (1) "hidden regularity" associated with the delay term describing the effect of the flow, (2) natural dispersive effects associated with the flow which translate into "hidden" dissipation affecting the structure. (Received September 13, 2013)