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Daniel Y Toundykov* (dtoundykov@math.unl.edu), Avery Hall 203, P.O. 880130, Lincoln, NE 68588. *Finite-dimensional attractor for a structural-acoustic system with a localized feedback control.*

A system of coupled hyperbolic PDE's will be considered, modeling an acoustic chamber (wave equation) with a flexible boundary wall (Berger's plate). The wall is subject to a damping mechanism distributed over the entire surface, while the acoustic component is only dissipated on a subset of the interior domain. Both PDE's are perturbed by critical source terms. Critical sources correspond to non-compact perturbations of the principal dynamics, and may prevent convergence of trajectories to a global attractor.

The restricted dissipation on the wave equation, in combination with the critical source, prevents the applicability of standard methods when studying long-term behavior of this model. I will highlight some of the established, as well as more recent techniques, whose combination helps verify that such a coupled system may possess a finite-dimensional global attractor.

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