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Sergio P. Frigeri and **Joseph L. Shomberg*** (jshomber@providence.edu), 1 Cunningham Square, 212 Howley Hall, Providence, RI 02918. *Attractors for Damped Semilinear Wave Equations with a Robin–Acoustic Boundary Perturbation*. Preliminary report.

Under consideration is the damped semilinear wave equation

$$u_{tt} + u_t - \Delta u + u + f(u) = 0$$

on a bounded domain Ω in \mathbb{R}^3 with a perturbation parameter $\varepsilon > 0$ occurring in an acoustic boundary condition, limiting ($\varepsilon = 0$) to a Robin boundary condition. With minimal assumptions on the nonlinear term f , the existence and uniqueness of global weak solutions is shown for each $\varepsilon \in [0, 1]$. Also, the existence of a family of global attractors is shown to exist (re: J. Ball’s generalized semiflows). After proving a general result concerning the upper-semicontinuity of a one-parameter family of sets, the result is applied to the family of global attractors. No further regularity from the global attractors is needed in order to obtain this upper-semicontinuity result. With more relaxed assumptions on the nonlinear term f , we are able to show the global attractors possess optimal regularity and prove the existence of an exponential attractor, for each $\varepsilon \in [0, 1]$. This result insures that the corresponding global attractor inherits finite (fractal) dimension; however, the dimension is *not* necessarily uniform in ε . (Received January 08, 2015)