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Charlottesville, VA 22901. *Long time behavior in nonlinear hyperbolic evolutions.*

We shall consider 3-d dynamics described by a semilinear wave equation with geometrically constrained damping. This includes models with dissipation supported on zero measure sets. The main aim of the talk is to present results on existence and properties of global attractors associated with this type of dynamics. Particular emphasis will be paid to criticality of exponents characterizing nonlinear sources. We shall show that the ultimate behavior of the hyperbolic flow is both smooth and finite dimensional. The proofs are based on both analytical and topological methods which involve Carleman's estimates and unique continuation. (Received August 16, 2008)