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Robert Booth, NC, and **Hans Christianson**, **Jason Metcalfe** and **Jacob S Perry***, CB
3250, 329 Phillips Hall, 120 E Cameron Ave, Chapel Hill, NC 27599-3250. *Local energy decay for wave equations with degenerate trapping.*

Localized energy estimates for solutions to the wave equation are well studied and provide a global integrability estimate (in both time and space). Analogous local smoothing estimates for the Schrodinger equation are well established and show that locally in space and averaged in time, solutions gain one half of a derivative in regularity compared to the initial data. When considering such estimates for equations on differentiable manifolds, in either case it is known that geodesic trapping necessitates a loss. For non-degenerate hyperbolic trapping, the loss is logarithmic. For elliptic trapping, everything is lost except a logarithm. Recently, Christianson and Wunsch demonstrated an algebraic loss for solutions to the Schrodinger equation on a surface of revolution with degenerate hyperbolic trapping. In this talk, we will review these prior results and consider the analogue for the wave equation on a warped product manifold with degenerate hyperbolic trapping, attaining an algebraic loss of derivative. We will then use a quasimode construction to show that our estimate is sharp. This is a joint work with Robert Booth, Hans Christianson, and Jason Metcalfe. (Received September 27, 2017)