1035-35-1320 **Jonathan J Kenigson*** (jkenigso@utk.edu), University of Tennessee, Department of Mathematics, Knoxville, TN 37996, and **Jessica S Kenigson** (jkenigs1@utk.edu), University of Tennessee, Department of Mathematics, Knoxville, TN 37996. *Energy Decay Estimates for the Dissipative Wave Equation with Space-Time Dependent Potential.*

We establish weighted L^2-estimates for the wave equation with a damping term and a space-time dependent potential $a(x,t)$ in R^n. Fourier analysis remains a powerful tool when the potential $a = a(t)$ is a function of time and has been used by many authors to derive sharp decay estimates. When $a = a(x)$ the Fourier technique becomes cumbersome. In general multiplier techniques yield weak, dimension-independent decay estimates. Recently, a strengthened multiplier method has been developed for the dissipative wave equation with x-dependent potential $a(x,t) = a(x)$. The method gives sharp results. Our approach is a nontrivial application of this strengthened multiplier method to the case of dissipative equation with space-time dependent potential $a(x,t)$. We derive sharp decay estimates of the energy and the L^2 norm of solutions. (Received September 19, 2007)