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K Morgan* (katri@live.unc.edu). *The Effect of the Behavior at Spatial Infinity of Spacetimes on the Pointwise Decay Rate of Waves*. Preliminary report.

We examine the effect of the rate at which an asymptotically flat spacetime tends to the Euclidean metric on the point-wise decay rate of solutions to the wave equation. This work is motivated by Price's Law in General Relativity, which predicts a t^{-3} decay rate for waves on the Schwarzschild spacetime. The decay rate predicted by Price's Law was established by Tataru 2013 for a class of spacetimes which includes the Schwarzschild and Kerr with low angular momentum metrics. The current work seeks to understand how the behavior of the background geometry dictates the observed decay rate. In particular, we are interested in the behavior of the spacetime at spatial infinity, as this appears to play a decisive role in establishing Price's Law. Under the assumption that the background geometry satisfies a weak local energy estimate (which is satisfied, for example, by Schwarzschild and Kerr with low angular momentum), we analyze the rate of decay of waves on spacetimes which tend toward the flat metric at a rate of r^{-k} . (Received August 13, 2017)