1106-35-577 **Sam J Stewart*** (sstewart@lclark.edu), Lewis and Clark College - MSC 211, 0615 SW Palatine Hill Rd, Portland, OR 97219. *Singularities of Wave Equations with Quadratic Nonlinearities.*

We consider non-linear wave equations $\phi_{tt} - \Delta\phi = Q(\partial\phi)$ in three spatial dimensions. We focus on the case where $Q(\partial\phi) = (\phi_t)^2 - (\phi_r)^2$, as it is a particularly interesting example for studying the long-term behavior. For sufficiently small initial data, global existence of solutions is known, but for large initial data, it is expected that, generically, solutions blow up in finite time. In our work, we seek to understand this singularity formation using both numerical simulations and theoretical considerations. (Received September 14, 2014)