

1126-35-285

**Gideon Simpson\*** ([grs53@drexel.edu](mailto:grs53@drexel.edu)), Philadelphia, PA 19104. *Adaptive Methods for Derivative Nonlinear Schrödinger Equations*. Preliminary report.

Numerical simulations of  $L^2$  supercritical derivative nonlinear Schrödinger equations suggest the existence of finite time singularities. Thus far, the numerical studies have relied upon either integration of the original equation or the dynamic rescaling method. The first approach is limited because of the singularity, while the latter approach is limited by the hyperbolic character of the nonlinearity. In both cases, simulations have been restricted to relatively supercritical cases, bounded away from the limiting critical case. Using locally adaptive meshing methods, we are able to overcome prior difficulties, integrating closer to the singularity time with nonlinearities closer to the critical value. (Received January 16, 2017)