1056-35-1987 **John Bernard Gonzalez*** (johngonz@gmail.com), 28 Forest St. #1, Somerville, MA 02143.

Solutions of the Nonlinear Schrödinger Equation with Prescribed Asymptotics at Infinity. Preliminary report.

We prove local existence and uniqueness of solutions for the one-dimensional nonlinear Schrödinger (NLS) equations $iu_t + u_{xx} \pm |u|^2 u = 0$ in classes of smooth functions that admit an asymptotic expansion at infinity in decreasing powers of x. We show that an asymptotic solution differs from a genuine solution by a Schwartz class function which solves a generalized version of the NLS equation. The latter equation is solved by discretization methods. The proofs closely follow previous work done by the author and others on the Korteweg-De Vries (KdV) equation and the modified KdV equations. (Received September 22, 2009)