1010-35-85 **Sihon Crutcher*** (sihoncrutcher@knology.net), Alabama A&M University, Department of Physics, Normal, AL 35762, **Anjan Biswas** (abiswas@tnstate.edu), Tennessee State University, Department of Mathematics, Nashville, TN 37209, **Manmohan D. Aggarwal** (maggarwal@aamu.edu), Alabama A&M University, Department of Physics, Normal, AL 35762, and **Matthew E. Edwards** (edwardsm@aamu.edu), Alabama A&M University, Department of Physics, Normal, AL 35762. *Stationary power law temporal solitons in waveguides and frequency calculations of the swing effect in two dimesional spatial solitons.*

The one-particle type temporal soliton exists by maintaining a balance between dispersive linear contributions on the one hand and non-linear effects on the other. The linear contributions occur from processes such as group velocity and polarization mode dispersion. The nonlinear features occur from Kerr, or power law non-Kerr behavior. In addition, perturbations, such as damping and Brillouin scattering, exist. In this paper, we review the propagation of temporal solitons in power law media. This is developed through the higher nonlinear Schrödinger's equation (HNLSE). Also, the fundamentals of multiple-scales are presented that will be used to yield quasi-stationary solitons when perturbations are present. In waveguides, the one-particle type spatial soliton exists by maintaining a balance between the linear propagational diffraction and non-linear self-focusing, while possibly being subjected to a variety of perturbations. Here, we use a spatial optical soliton solution to the nonlinear Schrödinger equation in an inhomogeneous triangular refractive index profile as a small index perturbation to illustrate the "swing effect." We determine for the motion of spatial soliton, its effective acceleration and frequency of oscillation. Such spatial solitons behave as point masses. (Received August 21, 2005)