1077-35-277   **Dmitry Pelinovsky*** (`dmpeli@math.mcmaster.ca`). *Broad Band Solitons in a Periodic and Nonlinear Maxwell System.*

We consider the nonlinear Maxwell equations with the small linear periodic refractive index. We show that the system of infinitely many coupled-mode equations for the Fourier amplitudes of counter-propagating waves cannot be truncated if no linear constant-coefficient dispersion is present. The new system of infinitely many coupled mode equations is analyzed for the existence of gap soliton solutions. We reduce it to an infinite system of coupled nonlinear Schrödinger equations, for which we show the existence of coupled solitons by both Rayleigh-Ritz methods and numerical solution of the differential equations. Lifting the approximations of the coupled NLS solutions back to the coupled mode equations, we show that the broad band solitons are robust in the time-dependent computations. This is a joint work with Gideon Simpson (University of Toronto) and Michael Weinstein (Columbia University). (Received August 18, 2011)