SEMINÁRIO DE EQUAÇÕES DIFERENCIAIS

Asymptotic behavior of the Schrödinger-Debye system with refractive index of square wave amplitude

ADAN CORCHO

UFRJ

04/07/2017 (Terça-Feira)

16:00 horas

Sala 321 do IMECC

Resumo: We consider $(u_\tau, v_\tau) \in H^1 \times H^1$ solutions of the focusing one-dimensional Schrödinger-Debye system with small response time ($0 < \tau \ll 1$) and data (u_{τ_0}, v_{τ_0}) uniformly bounded in $H^1 \times L^2$ and verifying that $u_{\tau_0} \xrightarrow{H^1} u_0$ as τ tends to 0. We prove that (u_τ, v_τ) converge to $(u, -|u|^2)$ in the space $L^\infty_{[0,T]}L^2_x \times L^1_{[0,T]}L^2_x$, when τ tends to zero, where u is the solution of the classical one-dimensional cubic nonlinear Schrödinger equation with initial data u_0. Furthermore, under certain compatibility conditions for initial data we prove the convergence $v_\tau \xrightarrow{L^\infty_T L^2_x} -|u|^2$. Our results improve the previous ones obtained by B. Bidégaray in 1998 (see Advances in Differential Equations Vol. 3, Number 3, 1998).

This a joint work with Juan Carlos Cordero (Universidad Nacional de Colombia - Sede Manizales)