Conference in honor of G. Henkin **18-22 June, 2007**

Long-time asymptotics for the Camassa–Holm and NLS equations

Anne Boutet de Monvel
Université Paris 7
aboutet@math.jussieu.fr

Abstract : I will describe the long-time asymptotic behavior of the solution $u(x,t)$ of the Cauchy problem for the Camassa–Holm (CH) equation $u_t - u_{txx} + 2\omega u_x + 3uu_x = 2u_x u_{xx} + uu_{xxx}$ on the line with fast decaying initial data $u_0(x)$, ω being a positive parameter.

I will also describe the long-time asymptotic behavior of the solution $q(x,t)$ of the initial-boundary-value problem for the focusing nonlinear Schrödinger equation $\mathrm{i}q_t + q_{xx} + 2|q|^2 q = 0$, on the first quarter plane $x > 0$, $t > 0$ for fast decaying initial data $q_0(x)$ and *time-periodic* boundary value $g_0(t)$.

In both cases the solution $u(x,t)$ (resp. $q(x,t)$) behaves differently in various sectors of the (x,t)-half-plane (resp. quarter-plane).

The methods are inverse scattering transform in a matrix Riemann-Hilbert formulation and Deift and Zhou's nonlinear steepest descent method.

Work in collaboration with Dmitry Shepelsky (CH) and with Alexander Its and Vladimir Kotlyarov (NLS).