Speaker: Marco BERTOLA (SISSA, Italy/Montreal, Canada)

Title: Degeneration of Riemann surfaces, Theta functions and solitons

Abstract: I will report on recent work with Alexander Tovbis and Bob Jenkins on how to compute effective formulas for the partial degeneration of Theta functions on nodal surfaces. As an application we provide the study of solitons on stationary cnoidal background of the KdV equation. Some interesting physical phenomena include the fact that the ``solitons" are now more like wave-packets with distinct group and phase velocities. The group velocity may be positive (as usual) or negative (retrograde solitons). Moreover the explicit formula allows for the study of the soliton-on-soliton scattering matrix.