

Seminar: "Geometry&Physics", DFT (IFIN-HH)
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Location: DFT seminar room, IFIN-HH, Magurele

Date: Friday, September 2, 2016, 11:00 AM

Title: **Non-local reductions of multicomponent NLS equations**

Speaker: **Prof. Vladimir Gerdjikov**
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Abstract: "Multicomponent generalizations of derivative nonlinear Schrödinger (DNLS) type of equations having quadratic bundle Lax pairs related to \mathbb{Z}_2 -graded Lie algebras and A.III symmetric spaces are studied. The Jost solutions and the minimal set of scattering data for the case of local and nonlocal reductions are constructed. The latter lead to multicomponent integrable equations with \mathcal{CPT} -symmetry. Furthermore, the fundamental analytic solutions (FAS) are constructed and the spectral properties of the associated Lax operators are briefly discussed. The Riemann-Hilbert problem (RHP) for the multicomponent generalizations of DNLS equation of Kaup-Newell (KN) and Gerdjikov-Ivanov (GI) types are derived. A modification of the dressing method is presented allowing the explicit derivation of the soliton solutions for the multicomponent GI equation with both local and nonlocal reductions. It is shown that for specific choices of the reduction these solutions can have regular behavior for all finite x and t . The fundamental properties of the multi-component GI equations are briefly discussed at the end.