Joint Seminar: DFT (IFIN-HH) & "Geometry&Physics@DFT" (IFIN-HH)
([Geometry&Physics Homepage](#)) ([DFT Seminars webpage](#))

Date: Thursday, Nov. 24, 2022, 12:00 noon

Speaker: **Prof. Stefan Carstea** (IFIN-HH, Dept. of Theoretical Physics)

Title: **Classical and Quantum dynamics of nonlinear rotons in spherical fluids: from nuclei to neutron stars**

Abstract: Irrotational flow of a spherical thin liquid layer surprinși a rigid core is described using the defocusing nonlinear Schrodinger equation. Accordingly, azimuthal moving nonlinear waves are modeled by periodic dark solitons expressed by elliptic functions. In the quantum regime the algebraic Bethe ansatz is used in order to capture the energy levels of such motions, which we expect to be relevant for the dynamics of the nuclear clusters in deformed heavy nuclei surface modeled by quantum liquid drops. We apply the same ideas to model nonlinear waves at the surface of a neutron star. In slow variables we obtain Korteweg de Vries equation with small dispersion. Periodic excitations and shock waves are analysed.