Seminar: "Geometry&Physics@DFT"

Location: seminar room DFT (IFIN-HH),
(http://events.theory.nipne.ro/gap/index.php/seminar)

Date: Friday, 10 January 2014, 12 am

Title: **SUSY breaking, (s)goldstino physics and the constrained superfields formalism**

Speaker: **Dr. Dumitru M. GHILENCEA**

Abstract: "We consider 4D N=1 supersymmetric effective theories with a low SUSY breaking scale ($\sqrt{f}$) and arbitrary Kahler potential $K(\Phi^i, \Phi_j^\dagger)$ and superpotential $W(\Phi^i)$ to study the relation of the goldstino superfield to the (Ferrara-Zumino) superconformal symmetry breaking chiral superfield X. For more sources of supersymmetry breaking, we verify the Seiberg-Komargodski conjecture that the goldstino superfield is the (infrared) limit of X for zero-momentum and $\Lambda \to \infty$ (Λ=effective cut-off scale). We study constraints such as $X^2 = 0$, which in the one-field case decouples a massive sgoldstino to provide an effective superfield description of the Akulov-Volkov action for the goldstino. This constraint was conjectured to remain valid in a general case. We investigate it in the presence of more fields and identify the (UV) conditions for which $X^2 = 0$ remains true, in the effective theory below the sgoldstino mass. These ensure that the expansion (in $1/\Lambda$) of the Lagrangian is consistent with the decoupling limit of the sgoldstino. Some implications for the couplings of the (s)goldstino fields to realistic models such as the MSSM are discussed."