LNGS SEMINAR SERIES

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Self-Dual Yang-Mills Theories

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We shall discuss a first-order gauge theory whose equations of motion are the self-duality equations. There are reasons to regard this theory as a "part" of standard YM Lagrangian responsible for "mostly plus" scattering amplitudes. The quantum properties of this self-dual theory are peculiarly simple, but still instructive, and hint at a possible complete solvability. This type of theory, on one hand, can be related to a certain limit of (twisted) N=2 super Yang-Mills theory, while, on the other hand, it is equivalent to a holomorphic Chern-Simons type theory on twistor space classically and presumably quantum mechanically.

DECEMBER 10, 2014 — 2:30 PM
LNGS - "E. MAJORANA" ROOM