Seminario INFN

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terrà il Seminario:

Exploring QCD_2 with Integrability

Abstract: The 't Hooft model, 2d QCD in the large N limit, offers a unique playground for exploring the dynamics of confinement in gauge theories. In this talk, based on joint works with S. Komatsu, I will illustrate that the Fredholm integral equation ('t Hooft equation) determining the masses of mesons in the model is equivalent to finding solutions to a TQ-Baxter equation. This reformulation of the problem illustrates a rich analytical structure of the spectrum in the complex plane of the quark masses, and makes possible to extract systematic analytical expansions for spectral determinants, energy levels, and wavefunctions. I will comment on possible connections between our techniques and TS/ST correspondence.

Remarkably, this integrable structure is not unique to the 't Hooft model, but persists also in the broad class of theories called generalized QCD, obtained by replacing the gluon kinetic term with a BF coupling plus a potential for the B-field. I will show that, also in this case, the associated 't Hooft equation is recasted into a TQ-equation with a transfer matrix given in closed form for any given potential. Applying the techniques developed for the 't Hooft model to these theories allows for a novel systematic study of the spectrum in the complex space of the couplings.

Martedì 19 Marzo 2024
alle ore 14:30
Aula Galilei