

Séminaire de matrices, cordes et géométries aléatoires

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On irrelevant deformations of integrable field theories:
CDD factors and generalized Gibbs ensemble

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The study of irrelevant perturbations has profound implications on our understanding of the space of QFTs and possesses important applications in Statistical and Condensed Matter Physics – e.g. the control on sub-leading corrections to the scaling limits of lattice models. In 1+1 D a partial map of the above mentioned space can be traced out thanks to the existence of integrable systems, which grant us a high degree of control on certain renormalization flows trajectories. In this talk I will present some results from a recent work concerning a large class of irrelevant perturbations that, in the framework of factorized scattering, can be described by generic deformations of the S-matrix by a CDD factor. I will show how these deformations can be described as certain field-dependent twists in the boundary conditions of the fields – a natural generalization of the geometric interpretation of the $T\bar{T}$ deformation – and that there exists a relation amongst CDD deformations and the thermodynamics of the Generalized Gibbs Ensemble. Exploiting the integrability of the models, I will derive a general flow equation for the finite size spectrum and, for the particular case of the sinh-Gordon model, will present a connection with the fermionic basis description of finite-size one-point functions.
