

T, Q and periods in SU(3) N=2 SYM

mercoledì 23 ottobre 2019 10:10 (35 minuti)

We consider the third order differential equation derived from the deformed Seiberg-Witten differential for pure $calN = 2$ SYM with gauge group $SU(3)$ in Nekrasov-Shatashvili limit of Ω -background. We show that this is the same differential equation that emerges in the context of Ordinary Differential Equation/Integrable Models (ODE/IM) correspondence for $2d A_2$ Toda CFT with central charge $c = 98$. We derive the corresponding QQ and related TQ functional relations and establish the asymptotic behaviour of Q and T functions at small instanton parameter $q \rightarrow 0$. Moreover, numerical integration of the Floquet monodromy matrix of the differential equation leads to evaluation of the A -cycles $a_{1,2,3}$ at any point of the moduli space of vacua parametrised by the vector multiplet scalar VEVs $\langle \text{tr } \phi^2 \rangle$ and $\langle \text{tr } \phi^3 \rangle$ even for large values of q which are well beyond the reach of instanton calculus. The numerical results at small q are in excellent agreement with instanton calculation. We conjecture a very simple relation between Baxter's T -function and A -cycle periods $a_{1,2,3}$, which is an extension of Alexei Zamolodchikov's conjecture about Mathieu equation.

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Classifica Sessioni: Wednesday morning 1

Classificazione della track: QFT