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Beyond the Planar Limit in ABJM Theory

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ABJM theory is an $N=6$ Superconformal Chern-Simons theory with gauge group $U(N) \times U(N)$. This gauge theory has been extensively studied in the planar limit. Motivated by similar results for $N=4$ SYM, the planar dilatation operator of ABJM theory has been mapped to the Hamiltonian of an integrable system.

Recently, it has been argued that there are large N (but not planar) limits of $N=4$ SYM theory for which the dilatation operator remains integrable. Indeed, it reduces to a set of decoupled harmonic oscillators.

Motivated by this result, in this talk we study large N but non-planar limits of the ABJM theory. This is accomplished by constructing a complete set of gauge invariant operators for the theory. The free two point functions of these operators is computed and the action of the dilatation operator on these gauge invariant operators is constructed.

Level (Hons, MSc, PhD, other)?

PhD Student

Consider for a student award (Yes / No)?

Yes

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

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