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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU

Large N behaviour of Macdonald-deformed 2D Yang-Mills theory

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Abstract:

A special class of four-dimensional BPS black hole partition function in IIA string theory are computed by deformed two-dimensional $U(N)$ Yang-Mills theory, and it is dual to topological strings on a particular six-dimensional Calabi-Yau space. The Macdonald deformation of Yang-Mills theory, which is a two-parameter deformation of the original theory, is dual to refined topological strings, and counts BPS states with spins. We use the representation theory of quantum groups and symmetric polynomials to study its planar limit and large N expansion. The special limit of the expanded partition function, which corresponds to Jack-polynomials, defines new class of parameterized Euler characters, which gives back the original Euler characters of covering spaces in the unrefined limit.

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