

## High Energy Physics - Theory

# Gauge Theories on ALE Space and Super Liouville Correlation Functions

Giulio Bonelli, Kazunobu Maruyoshi, Alessandro Tanzini

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We present a relation between  $N=2$  quiver gauge theories on the ALE space  $O_{\{P^1\}(-2)}$  and correlators of  $N=1$  super Liouville conformal field theory, providing checks in the case of punctured spheres and tori. We derive a blow-up formula for the full Nekrasov partition function and show that, up to a  $U(1)$  factor, the  $N=2^*$  instanton partition function is given by the product of the character of  $\widehat{\mathfrak{su}}(2)_2$  times the super Virasoro conformal block on the torus with one puncture. Moreover, we match the perturbative gauge theory contribution with super Liouville three-point functions.

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