



# ALGEBRA AND GEOMETRY SEMINAR

The Hong Kong University of Science and Technology  
Department of Mathematics

## **The affine super Yangian of $\mathfrak{gl}(1|1)$**

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Nakajima and Vafa-Witten noticed that the blow up formulae for the partition functions of Euler numbers on the instanton moduli space is the character of affine vertex algebra at level 1, and asked the CFT explanation. Together with Jiang and Li, we answered this question. However, our proof leaves more questions: how do we explain the Donaldson polynomials and the Seiberg-Witten prepotential as correlation functions in Liouville theory? In this talk, I will discuss the affine Yangian of  $\mathfrak{gl}(1|1)$ , and discuss how to solve the above problems through a larger algebra action.

Room 4504 (Lifts 25/26) Wed, Oct 1, 2025 04:00 PM

