Contribution ID: **28** Type: **not specified**

Bethe ansatz and algebraic geometry

Friday, 24 August 2018 15:15 (45 minutes)

In this talk, I will discuss how to apply methods of modern computational algebraic geometry to Bethe ansatz. I will show that algebraic geometry provides natural mathematical languages and powerful tools to understand the structure of solutions of Bethe ansatz equations (BAE). In particular, I will present new methods to count the number of physical solutions with fixed quantum numbers based on Gröbner basis and quotient ring. This method can be applied to study the completeness of Bethe ansatz. I will then discuss an efficient analytical method to compute the sum of on-shell physical quantities over all physical solutions without explicitly solving BAE. We apply this method to compute and study torus partition functions of the 6-vertex model at finite size. Finally, we find new internal structure of solution space of BAE and give the physical interpretations.

Summary

Presenter: JIANG, Yunfeng