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Strings, integrability and beyond

Jeudi 23 Novembre 2017, 14 :30
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Domaines : hep-th—math-ph

Titre : *Algebraic geometry and Bethe ansatz*

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Résumé : *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 also discuss an analytical method to compute the sum of on-shell physical quantities over all physical solutions without explicitly solving BAE. This method has important applications in calculating the sum rules of OPE coefficients in* $\mathcal{N} = 4$ *super-Yang-Mills theory.*