

Integrability plays an important role in the analysis of 4-dimensional  $\mathcal{N} = 4$  super Yang-Mills theory at planar limit or, in terms of the *AdS/CFT* duality, that of strongly coupled closed strings in  $AdS_5 \times S^5$  spacetime. The Bethe Ansatz method is one of the major approaches to these subjects and has been successful particularly at an asymptotic region. The asymptotic region is characterized by the length of “spin chains” being infinite; any operators of the planar Yang-Mills theory can be described by a set of states constructed by the spin chains. For the other regions, the Bethe Ansatz method is also applied and recent progress shows that anomalous dimension of the planar theory can be analyzed in terms of the so-called thermodynamic Bethe Ansatz (TBA) or a framework that is called the Y-system.

The article under review provides a summarious report on these recent developments with an emphasis on a so-called twist sector of the planar theory. To be specific, various analytic results on the high spin expansion of anomalous dimension in the twist sector are given in the article. The article may seem unfriendly to those readers who do not have a knowledge of the spin chain business but a set of analytic expressions for the anomalous dimension suggests the richness and usefulness of the spin chain approach to loop calculations in the planar  $\mathcal{N} = 4$  super Yang-Mills theory.