

This is a remarkable review on recent developments in the computation of scattering amplitudes by application of twistor diagrams. The twistor diagrams were first considered by Penrose who introduced the very idea of the twistor space to describe a *complexified* four-dimensional Minkowski space-time. The author of this review, Andrew Hodges, is one of the experts on the applications of the twistor diagrams to amplitudes calculations. As well-explained in the review, researches on this particular subject were carried out long time ago, in the early 1980s. Interestingly, from the year 2004 on, studies of twistor spaces and associated twistor diagrams revive in search of new calculatory methods in amplitudes of gauge and gravity theories. Hodges presents in lucid narrative how the twistor diagrams lead to recent novel formulations of the scattering amplitudes; see, for example, [1]-[5]. These recent results potentially change our perspectives of traditional formulations in quantum field theory. They not only bring about new interactions between physics and mathematics but also present alternative computational tools for practical and experimental purposes. Lastly, it should be noted that Hodges is the only scholar that involves both the early and the latest developments of the twistor diagram approaches to scattering amplitudes. This is why this review is clear in historical as well as technical perspectives. It is worth reading for any mathematical physicists.

References

- [1] N. Arkani-Hamed, F. Cachazo, C. Cheung and J. Kaplan, “A Duality For The S Matrix,” JHEP **1003**, 020 (2010) [arXiv:0907.5418 [hep-th]].
- [2] F. Cachazo, L. Mason and D. Skinner, “Gravity in Twistor Space and its Grassmannian Formulation,” SIGMA **10**, 051 (2014) [arXiv:1207.4712 [hep-th]].
- [3] N. Arkani-Hamed, J. L. Bourjaily, F. Cachazo, A. B. Goncharov, A. Postnikov and J. Trnka, “Scattering Amplitudes and the Positive Grassmannian,” arXiv:1212.5605 [hep-th].
- [4] N. Arkani-Hamed and J. Trnka, “The Amplituhedron,” JHEP **1410**, 30 (2014) [arXiv:1312.2007 [hep-th]].
- [5] N. Arkani-Hamed and J. Trnka, “Into the Amplituhedron,” JHEP **1412**, 182 (2014) [arXiv:1312.7878 [hep-th]].