

In this article the authors investigate infinite half-integer spin fields, following the twistorial formulation of massless infinite spin particles [1, 2]. The authors first review how the infinite half-integer spin fields can be defined in terms of twistor variables or Weyl spinors. This novel description is then applied to the construction of a Lagrangian for infinite half-integer spin fields by means of the BRST quantization, following the formulation developed in [3]. As expected the resultant Lagrangian is gauge invariant and its explicit form is given in equation (3.46). Definitions and results are presented in detail so interested readers may follow the main contents without referring to references. The introductory and concluding sections are also useful for the reader to grasp the main results.

References

- [1] I. L. Buchbinder, S. Fedoruk, A. P. Isaev and A. Rusnak, “Model of massless relativistic particle with continuous spin and its twistorial description,” *JHEP* **07**, 031 (2018) doi:10.1007/JHEP07(2018)031 [arXiv:1805.09706 [hep-th]].
- [2] I. L. Buchbinder, S. Fedoruk and A. P. Isaev, “Twistorial and space-time descriptions of massless infinite spin (super)particles and fields,” *Nucl. Phys. B* **945**, 114660 (2019) doi:10.1016/j.nuclphysb.2019.114660 [arXiv:1903.07947 [hep-th]] (MR3959820).
- [3] I. L. Buchbinder, V. A. Krykhtin and H. Takata, “BRST approach to Lagrangian construction for bosonic continuous spin field,” *Phys. Lett. B* **785**, 315-319 (2018) doi:10.1016/j.physletb.2018.07.070 [arXiv:1806.01640 [hep-th]].