

Generalized BMS algebra at timelike infinity

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BMS (Bondi-Metzner-Sachs) group (and its various generalizations) at null infinity has been studied extensively in the literature as the symmetry group of asymptotically flat spacetimes. The intricate relationship between soft theorems and the BMS symmetries has also motivated the definition of such asymptotic symmetries to timelike infinity [M. Campiglia, Null to time-like infinity Green's functions for asymptotic symmetries in Minkowski spacetime, J. High Energy Phys. 11 (2015) 160.JHEPFG1029-847910.1007/JHEP11(2015)160]. Although the vector fields that generate the (generalized) BMS algebra at timelike infinity were defined in the literature, the algebra has not been investigated. In this paper, we fill this gap. We show that the supertranslations and vector fields that generate sphere diffeomorphisms close under the modified Lie bracket proposed by Barnich and Troessaert [Aspects of the BMS/CFT correspondence, J. High Energy Phys. 05 (2010) 062.JHEPFG1029-847910.1007/JHEP05(2010)062].

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