

Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Angular momentum at null infinity in Einstein-Maxwell theory

KARTIK PRABHU, Cornell University, BEATRICE BONGA, Radboud University, ALEXANDER GRANT, Cornell University — On Minkowski spacetime, the angular momentum flux through null infinity of Maxwell fields, computed using the stress-energy tensor, depends not only on the radiative degrees of freedom, but also on the Coulombic parts. This flux cannot be written as the change of an angular momentum charge computed purely on cross-sections of null infinity. We investigate the angular momentum charge and flux in full Einstein-Maxwell theory. Using the prescription of Wald and Zoupas, we compute the charges associated with any BMS symmetry on cross-sections of null infinity. The change of these charges along null infinity then provides a flux. For Lorentz symmetries, the Maxwell fields contribute an additional term to the charge on a cross-section, compared to the charge in vacuum general relativity. With this additional term, the flux associated with Lorentz symmetries, e.g. the angular momentum flux, is purely determined by the radiative degrees of freedom of the gravitational and Maxwell fields. In fact, the contribution to this flux by the Maxwell fields is given by the purely radiative Noether current flux and not by the stress-energy flux.

Kartik Prabhu
Cornell University

Date submitted: 07 Jan 2020

Electronic form version 1.4