Abstract

The objective of this work is to understand how the characteristics of relativistic MHD turbulence may differ from those of nonrelativistic MHD turbulence. We accomplish this by studying the ideal invariants in the relativistic case and comparing them to what we know of nonrelativistic turbulence. Although much work has been done to understand the dynamics of nonrelativistic systems (mostly for ideal incompressible fluids), there is minimal literature explicitly describing the dynamics of relativistic MHD turbulence using numerical simulations. Many researchers simply assume that relativistic turbulence has the same invariants and obeys the same dynamics as non-relativistic systems our results show that this assumption may be incorrect.