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Flux-rope distribution function through a Maximum Entropy principle MANASVI LINGAM, Harvard University, LUCA COMISSO, AMITAVA BHATTACHARJEE, Princeton University — The Principle of Maximum Entropy (MaxEnt) is utilized for inferring the distribution function of flux ropes formed through a resistive instability as a function of their mass, flux and velocity [1]. Our treatment is 3D (flux ropes) in nature, as opposed to previous works that have studied 2D structures (plasmoids) [2,3]. The distributions for the mass, width, flux and helicity are characterized by a power-law behavior with exponents of -4/3, -2, -3 and -2 respectively for small values, and display an exponential falloff for large values. The velocity distribution is shown to be flat at small values and becomes a power law for large values with an exponent of -7/3. A preliminary comparison with observational evidence suggests that the predictions of the theoretical model are consistent with the latter.
References: [1] M. Lingam, L. Comisso A. Bhattacharjee, arXiv:1702.05782 (2017) [2] D. A. Uzdensky, N. F. Loureiro A. A. Schekochihin, Phys. Rev. Lett., 105, 235002 (2010) [3] Y.-M. Huang A. Bhattacharjee, Phys. Rev. Lett., 109, 265002 (2012)

Manasvi Lingam
Harvard University

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