

Identification of Extended Emission Gamma-Ray Burst Candidates Using Machine

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In this work, I will present the t-distributed stochastic neighbour embedding (t-SNE), a machine-learning technique, to classify GRBs. We present the results for GRBs observed until 2022 July by the Swift/ BAT (Burst Alert Telescope) instrument in all its energy bands. We show the effects of varying the learning rate and perplexity parameters, as well as the benefit of preprocessing the data by a nonparametric noise-reduction technique. Consistently with previous works, we show that the t-SNE method separates GRBs into two subgroups. We also show that EE GRBs reported by various authors under different criteria tend to cluster in a few regions of our t-SNE maps and identify seven new EE GRB candidates by using the gamma-ray data provided by the automatic pipeline of Swift/BAT and the proximity with previously identified EE GRBs.

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