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Investigating Potential Magnetar-like FRBs Through UMAP Analysis of CHIME/FRB Data

Fast Radio Bursts (FRBs) are high-energy, transient phenomena with extremely short durations, and their origin remains uncertain. Various theories have been proposed to explain their mechanism. Among these, FRB 200428 has been confirmed to originate from the magnetar SGR 1935+2154, providing a potential model for understanding other FRBs. In this study, I use the physical parameters of FRB 200428 as a reference, assuming that the sources in the CHIME/FRB Catalog are at the same distance. Based on this assumption, I compute the corresponding physical parameters for these sources. The CHIME/FRB Catalog offers a rich dataset, which includes both repeating and non-repeating FRBs. To analyze this data, I apply Uniform Manifold Approximation and Projection (UMAP) for classification, aiming to determine whether other sources exhibit similar physical processes as FRB 200428.

Section

High Energy

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