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Type : **Poster**

Modelling the Energy and Redshift distribution of FRBs using the Second CHIME/FRB catalog

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Fast radio bursts (FRBs) are energetic millisecond-duration bursts with extragalactic origins. Roughly 4000 unique sources have been observed to date, about 3% of which have been seen to repeat, though it remains unclear whether all FRBs repeat.

An FRB population study addresses several key questions: How often do FRBs occur in the universe? What energy and redshift distributions do they follow? Is their occurrence correlated with the cosmic star formation history (SFH)? Answering these questions helps contextualize the origins of FRBs with potential astrophysical sources such as magnetars and supernovae.

Previous population studies, based on samples of a few hundred sources, have provided important constraints on FRB rates and energetics. However, these analyses were limited by smaller sample sizes, less well-characterized selection effects, and uncertain treatment of repeat bursts.

The recently released Second CHIME/FRB Catalog contains more than 90% of all known FRB sources (≈ 3600) and provides well-calibrated selection effects. We leverage this sample to infer key FRB properties, including the volumetric rate, energy function, redshift distribution, and correlation with the cosmic SFH. We then compare the predicted energetics and abundances with proposed FRB models and contrast the inferred redshift distributions with those of FRBs with known host galaxies.

Did you give a contributed talk at CASCA 2026?

Yes

If you are selected for a poster, would you be interested in giving a short flash talk on your work?

Yes

What is your career level?

PhD

Which keyword describes the area of focus of this talk?

Transients

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