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Extragalactic Probes for a Galactic Model: Validating the NE2025 Galactic Electron Density Model using CHIME Fast Radio Bursts Scattering Measurements

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Models of the Galactic electron density are widely used to predict distances and scattering of compact radio sources, and to account for interstellar medium foregrounds in extragalactic studies. The recently updated NE2025 model (Ocker & Cordes 2026) offers improvements over its predecessor, the commonly referenced NE2001. However, its scattering predictions have yet to be tested by extra-galactic sources. In this talk, I will present a direct test using fast radio bursts (FRBs) detected by CHIME/FRB. Since FRB signals propagate through the full Galactic interstellar medium, their observed scattering must equal or exceed the Milky Way contribution, making them natural constraints on Galactic scattering models. Using CHIME/FRB baseband data, we measure scattering timescales at microsecond-to-millisecond precision and compare them to the NE2025 prediction along each line of sight. I will show that while most FRBs are scattered well beyond the Galactic prediction, a subset of minimally scattered FRBs place hard upper limits on the true Galactic scattering, clustering in a region of overestimation by NE2025. I will discuss what these sightlines can reveal regarding specific model parameters, and the outlook for using FRBs to calibrate future models.

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No

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?

Galaxies

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Session Classification : Galaxies, Gas/dust, Solar system & Stars