

Abstract Submitted
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Probing the Milky Way electron density using multi-messenger astronomy¹ KATELYN BREIVIK, CIERA, Northwestern University, SHANE LARSON, CIERA, Northwestern University and Department of Astronomy, Adler Planetarium — Multi-messenger observations of ultra-compact binaries in both gravitational waves and electromagnetic radiation supply highly complementary information, providing new ways of characterizing the internal dynamics of these systems, as well as new probes of the galaxy itself. Electron density models, used in pulsar distance measurements via the electron dispersion measure, are currently not well constrained. Simultaneous radio and gravitational wave observations of pulsars in binaries provide a method of measuring the average electron density along the line of sight to the pulsar, thus giving a new method for constraining current electron density models. We present this method and assess its viability with simulations of the compact binary component of the Milky Way using the public domain binary evolution code, BSE.

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