Contribution ID: **42**   Type: **Contributed talk in mini symposium**

Investigating the Connection between Persistent Radio Sources and Fast Radio Bursts

Monday, 11 December 2023 14:55 (12 minutes)

The first repeating fast radio burst (FRB) was discovered in a dwarf host galaxy, and unveiled a surprising persistent radio source (PRS) co-located with the bursts and offset from its host center. At present, the prevailing progenitor model for this source invokes a young magnetar engine born from a superluminous supernova or long-duration gamma-ray burst based on their similar host environments. Testing this hypothesis motivates a systematic study of PRS emission in dwarf galaxies, to decipher the physical origins of PRSs and ultimately FRBs. Thus, we acquired new multi-frequency VLA and EVN observations of a sample of compact radio sources found in dwarf galaxies and offset from their galactic centers. I show that these sources exhibit various spectral shapes and variable light curves that are mostly dissimilar from the two PRSs confirmed to date, suggesting a diversity in the source population attributed to either physical origin or intrinsic properties. Finally, I present VLA and HST observations of the hyperactive FRB20201124A, where we place deep constraints on PRS emission, unveil signs of obscured star formation, and explore novel progenitor scenarios for this superlative event.

Primary author: DONG, Yuxin (Northwestern University)

Co-authors: Prof. REINES, Amy (Montana State University); Dr MARGALIT, Ben (UC Berkeley); Prof. METZGER, Brian (Columbia University); Prof. BERGER, Edo (Harvard University); Prof. HESSELS, Jason (ASTRON); Prof. GREENE, Jenny (Princeton University); Prof. DARLING, Jeremy (CU Boulder); Mr OULD-BOUKATTINE, Omar (ASTRON); Dr BHANDARI, Shivani (CSIRO); Dr EFTEKHARI, Tarraneh (Northwestern University); Prof. FONG, Wen-fai (Northwestern University); Dr WILLIAMS, Peter (Center for Astrophysics | Harvard & Smithsonian)

Presenter: DONG, Yuxin (Northwestern University)

Session Classification: Neutron Stars