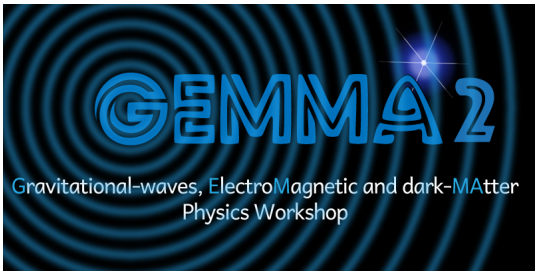

Contribution ID: **81** Type: **Invited Talk**

Searching for Radio and Gamma-ray Millisecond Pulsars with MeerKAT

Wednesday, 18 September 2024 09:55 (25 minutes)

TRAnsients and PUlsars with MeerKAT (TRAPUM) is a large survey project using the new MeerKAT radio interferometer to search for pulsars in the southern sky. TRAPUM's targeted searches of globular clusters, nearby galaxies, Galactic nebulae, and gamma-ray sources have led to the discovery of around 150 new pulsars, the majority of which are millisecond pulsars (MSPs) in binary systems. In this talk, I will focus on 35 of these new MSPs that were found in TRAPUM's survey of unidentified Fermi-LAT gamma-ray sources, and on the multi-wavelength and multi-messenger follow-up science that can be performed with them. Many of these new MSPs are in "spider" binary systems, where optical light-curve modelling allows us to probe the upper limits of the pulsar mass distribution to help constrain the neutron star equation-of-state. I will also describe how joint radio and gamma-ray timing of these new MSPs provides 16-year ephemerides that enable searches for continuous gravitational waves in archival LIGO data, and allows these pulsars to join ongoing pulsar timing array projects searching for the stochastic gravitational wave background.

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