Contribution ID: **72** Type: **Contributed**

Pulsar wind nebulae as probes of high energy astrophysics

Wednesday 14 April 2021 19:30 (15 minutes)

Pulsar wind nebulae (PWNe) are created by the interaction between the highly relativistic winds from pulsars and their surroundings. When young, the PWN resides in the remnant produced by the supernova explosion, and confines the entire energy input of the pulsar. These PWNe also prove to be excellent particle accelerators. Hence, the properties of these systems can be used to study the formation of neutron stars, creation of particles in the pulsar magnetosphere, and their acceleration up to extreme energies in its wind. Fermi's spectral coverage of the GeV emission from these objects provides crucial information on the spectrum of both particles injected into the PWN, critical for understanding the underlying acceleration mechanism, and background photon fields, which provides important information on its surroundings. From modelling the radiative and dynamic evolution of a sample of PWNe we find a surprising variety in neutron star progenitors and, possibly, in particle acceleration mechanisms as well. I will present the initial results of this study and how they relate to our current understanding of core-collapse supernovae and particle acceleration up to extreme energies.

Primary author: STRAAL, Samayra

Presenter: STRAAL, Samayra

Session Classification: Exploring the Galaxy: Supernova Remnants & Pulsar Wind Nebulae

Track Classification: SNR/PWN