Contribution ID: **383** Type: **Contributed e-poster**

Understanding the high-energy emission of pulsars with synchro-curvature radiation models

Out of the several hundreds of gamma-ray pulsars known nowadays, only a few tens have been detected to emit also non-thermal X-ray radiation. Some aspects of the high-energy magnetospheric radiation are still unclear, such as the location of emission. In this talk I will present a radiative model which aims at explaining the high-energy emission of pulsars in an effective way, relying on only three free physical parameters: the electric field, the local magnetic field and the size of the emitting region. The model computes the dynamics of an ensemble of charged particles traveling in peculiar regions of a pulsar's magnetosphere and calculates their spectral emission via synchro-curvature radiation losses. The model successfully fits the entire gamma-ray pulsar population. It also reproduces satisfactorily both the X-ray and gamma-ray bands of the spectral energy distribution of a majority of those gamma-ray pulsars emitting also non-thermal X-rays, describing their spectra across eight orders of magnitude. I will show the most relevant results of the systematic spectral fitting of our model to the known population of high-energy pulsars, after improving the injection region assumptions. Finally, I will present how the spectral fitting can constrain the probable range of the spin period for unidentified pulsar candidates.

Based on:

Viganò D., Torres D. F., Hirotani K., Pessah M. E., 2015a, MNRAS, 447, 1164–1172

Torres D. F., 2018, Nature Astronomy, 2, 247

Torres D. F., Viganò D., Coti Zelati F., Li J., 2019, MNRAS, 489, 5494

Íniguez-Pascual, D., Viganò, D., Torres, D. F. 2022a, Submitted to MNRAS

Íniguez-Pascual, D., Torres, D. F., Viganò, D. 2022b, Submitted to ApJ

Primary author: ÍÑIGUEZ-PASCUAL, Daniel (Institute of Space Sciences (ICE, CSIC))

Co-authors: TORRES, Diego F (ICREA & Institute of Space Sciences (ICE, CSIC)); VIGANÒ, Daniele (Institute of Space Sciences (ICE, CSIC))

Presenter: ÍÑIGUEZ-PASCUAL, Daniel (Institute of Space Sciences (ICE, CSIC))

Session Classification: Contributed posters