Contribution ID: **7** Type: **oral**

Cherenkov Telescope Array Sensitivity to the High-Energy Tail of the Galactic Center Excess

Tuesday, 26 October 2021 15:00 (20 minutes)

Past studies of the Fermi Galactic Center Excess (GCE) have found evidence for a "high-energy tail" in the GCE spectrum. Such a signature could be the result of inverse-Compton (IC) gamma rays produced by the injection of electrons/positrons into the interstellar medium by the putative population of millisecond pulsar (MSPs) responsible for the GCE. For this TeVPA 2021 contribution, we present the results of an exhaustive study on simulated data, in which we analyze the detection potential of the forthcoming Cherenkov Telescope Array (CTA) to the high-energy tail of the GCE. In particular, we find that CTA will have sufficient sensitivity to detect this signal for physically reasonable electron/positron acceleration efficiencies, provided that the Galactic diffuse emission model (GDE) is well understood. Furthermore, we discuss the necessary conditions for a reliable CTA discovery in the case of a high degree of uncertainties in the GDE model. We also show that in the event that CTA observes an excess of diffuse gamma rays in the Galactic bulge, it will be able to discriminate between the dark matter and MSPs hypotheses, based on their distinct spatial morphologies.

Primary author: MACIAS, Oscar (U)

Co-authors: Mr SONG, Deheng (Virginia Tech); Prof. CROCKER, Roland (National University of Australia); Prof. ANDO, Shin'ichiro (University of Amsterdam); Prof. HORIUCHI, Shunsaku (Virginia Tech); Mr HARM, van Leijen (University of Amsterdam)

Presenter: MACIAS, Oscar (U)

Session Classification: Session 2