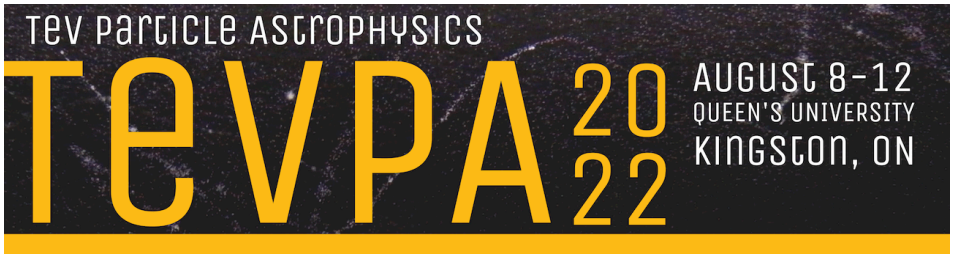

Contribution ID: **20** Type: **Parallel Talk**

Implications from 3-dimensional modeling of gamma-ray signatures in the Galactic Center

Monday 8 August 2022 16:10 (20 minutes)

The Galactic Center (GC) region has been intensively studied in gamma-rays in the past decades. Fermi LAT has discovered a GeV excess which is not fully understood, and the first detection of a *PeVatron* by H.E.S.S. indicates the existence of cosmic ray sources providing energies up to a PeV or higher. The emission of TeV gamma rays in the GC is affected by the source position and the distribution of the gas, photons and magnetic field within this region.
For the first time we model the TeV emission in a realistic three-dimensional distribution of gas as well as photon fields and use a complex magnetic field comprising the large-scale field structure and small-scale imprints of molecular clouds as well as non-thermal filaments. Additionally, we test different anisotropies of the diffusion tensor defined by the ratio of the diffusion coefficients perpendicular and parallel to the local magnetic field direction. For comparison we compute a two-dimensional gamma-ray distribution and compare it with H.E.S.S. measurements.

Collaboration name

Author: DÖRNER, Julien (Ruhr University Bochum)

Co-authors: FRANCKOWIAK, Anna (Ruhr-University Bochum); Dr FICHTNER, Horst (Ruhr University Bochum); TJUS, Julia; Dr HOERBE, Mario R. (Ruhr-University Bochum); GUENDUEZ, Mehmet (Ruhr-Universität Bochum); Mr BLOMENKAMP, Paul-Simon (Ruhr University Bochum)

Presenter: DÖRNER, Julien (Ruhr University Bochum)

Session Classification: Gamma Rays

Track Classification: Gamma Rays