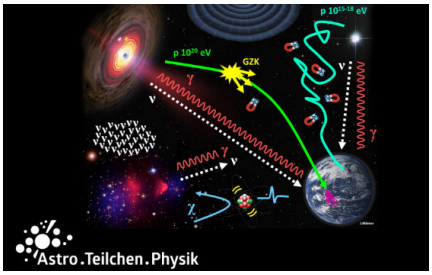

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Implications from 3-dimensional modeling of gamma-ray signatures in the Galactic Center

Wednesday, October 16, 2024 5:57 PM (2 minutes)

The Central Molecular Zone (CMZ) is one of the most extreme and close by astrophysical environments and of particular interest for studies of non-thermal processes. It is also one of the first known sources of cosmic-ray acceleration to PeV energies within our Galaxy. The emission of TeV gamma rays in the CMZ 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 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 measurements and make predictions for CTA.

Summary

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Session Classification: Poster session leading into social dinner buffet