

# Non-commutative space-time: a viable hypothesis to explain the gamma-ray excess in the galactic center

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We explore the non-commutative space-time to revive the idea that gamma-ray excess in the galactic center can be the result of particle dark matter annihilation. In this scenario, photon spectrum is produced by direct (prompt) emission during an annihilation where a photon can be embed in the final state together with other direct products in a new triplet vertex. In the various configurations of dark matter phenomenology, we adopt the most common model known as singlet scalar. Calculating the relevant aspects of the model, we can obtain the photon flux in the galactic center. Comparing our numerical achievements with experimental data reveals that non-commutative space-time can be a reliable framework to explain gamma-ray excess and even (in the future) other indirect signals of dark matter detection.

## Secondary track (number)

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**Author:** ZAKERI, Seyed Peyman (Institute for Research in Fundamental Sciences - IPM)

**Co-authors:** Dr REZAEI, Zahra (Yazd University); Mrs ALIZADEH, Tayebah (Yazd University)

**Presenter:** ZAKERI, Seyed Peyman (Institute for Research in Fundamental Sciences - IPM)

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