Constraints on decaying dark matter with LHAASO-KM2A

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Executive summary

What is this contribution about?

We present the first dark matter analysis in LHAASO-KM2A, which is a ground-based fully-duty extensive air shower array dedicated to very-high-energy (VHE) gamma-ray astronomy above 10 TeV.

Why is it relevant / interesting?

Unveiling the nature of dark matter is a fundamental open problem in modern science. In this context, our study aims at probing the dark matter scenarios proposed to explain the IceCube high-energy neutrino data through VHE gamma-ray observations.

What have we done?

We analyze 340 days of data collected by half-KM2A to constrain the dark matter lifetime for different dark matter masses (from 10^5 to 10^9 GeV).

What is the result?

We place some of the strongest gamma-ray limits on decaying dark matter particles, thus disfavoring the dark matter hypothesis for the diffuse high-energy neutrino flux observed by IceCube.