Contribution ID: **894** Type: **Talk**

Constraints on decaying dark matter with LHAASO-KM2A

Wednesday 21 July 2021 13:18 (12 minutes)

The measurement of diffuse gamma-ray emission could provide new insights into the propagation and acceleration of Galactic cosmic rays, the origin of neutrinos observed by IceCube, and the nature of dark matter. KM2A array in LHAASO is devoted to the detection of extensive air showers for gamma-ray astrophysics. Thanks to its large effective area and the good gamma/hadron separation, KM2A has an excellent sensitivity to the diffuse gamma-ray emission above tens TeV energies. In this work, we use the data from half-KM2A to set diffuse gamma-ray flux upper limit at 90% confidence level for almost 2/3 of the sky. And we present the first constraints placed by this result to decaying dark matter particles, scrutinizing different final states and dark matter masses, from 10^5 to 10^9 GeV. These limits are mainly driven by galactic prompt and secondary gamma-rays emission, while the extragalactic dark matter contribution is typically subdominant due to gamma-ray absorption. Moreover, we show that in some cases LHAASO-KM2A is already probing an unexplored parameter space, and we discuss in a multi-messenger context the implications for dark matter signals in neutrino telescopes.arameter space, and we discuss in a multi-messenger context the implications for dark matter signals in neutrino telescopes.

Keywords

LHAASO-KM2A data, HE diffuse gamma-ray emission, decaying dark matter

Collaboration

Lhaaso

other Collaboration

Subcategory

Experimental Results

Primary authors: CHIANESE, Marco (University of Naples, Federico II); LI, Zhe; Prof. NG, Kenny C.Y. (Department of physics, The Chinese University of Hong Kong); Prof. MIELE, Gennaro (University of Naples, Federico II); FIORILLO, Damiano Francesco Giuseppe (University of Naples "Federico II")

Presenter: CHIANESE, Marco (University of Naples, Federico II)

Session Classification: Discussion

Track Classification: Scientific Field: DM | Dark Matter