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Observational signatures of compact dark stars

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If the dark matter particle has self-interactions, it is generically expected that a fraction of the dark matter of the Universe would be in the form of compact dark stars, that could be detected as microlensing events. Here we consider the possibility that the dark matter not only interacts with itself, but also with the proton. If this is the case, protons from the interstellar medium could be captured by the compact dark star and eventually thermalize with it. We argue that the thermal radiation emitted by the captured protons could be intense enough to be detected by gamma-ray or X-ray telescopes, thus providing an additional avenue to indirectly detect dark matter.

Author: IBARRA, Alejandro

Presenter: IBARRA, Alejandro