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## **Expected exclusion limits to TeV dark matter from the Perseus Cluster with CTA**

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Clusters of galaxies are the largest gravitationally-bound structures in the Universe. They are composed of galaxies and gas (~15% of the total mass), and dark matter (DM; ~85%). If the DM is composed of Weakly Interacting Massive Particles (WIMPs), galaxy clusters represent the best targets to search for gamma-ray signals induced by the decay of WIMPs with masses at the TeV scale. Due to its sensitivity and energy range of operation (from a few tens of GeV up to tens of TeV), the Cherenkov Telescope Array (CTA) Observatory has a unique opportunity to test the decay of WIMPs with masses close to the unitarity limit, complementing the searches for DM from other gamma-ray observatories as well as direct and collider experiments. One of the most promising clusters in terms of expected DM annihilation/decay fluxes is Perseus. In the first years of operation the CTA Observatory is planning to search for both DM and cosmic-ray induced gamma-ray emissions in this cluster. In this talk, preliminary limits to the annihilation cross-section and decay lifetime of WIMPs with masses between 50 GeV and 100 TeV using simulated observations of Perseus with CTA will be presented.

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