



Contribution ID: 1453

Type: **Talk**

Probing WIMP Dark Matter with the Southern Wide-field Gamma-ray Observatory (SWGGO)

Friday 18 July 2025 16:35 (15 minutes)

Despite compelling astrophysical and cosmological evidence for dark matter (DM), its fundamental nature remains a mystery. We present sensitivity estimates for detecting DM particles using the next-generation Southern Wide-field Gamma-ray Observatory (SWGGO), a very-high-energy gamma-ray facility under development in the Southern Hemisphere. SWGGO will be sensitive to gamma rays in the energy range of hundreds of GeV to hundreds of TeV and will search for gamma-ray signals from DM annihilation or decay across key astrophysical targets, including the Galactic halo and several dwarf galaxies, notably the promising Reticulum II. With a wide field of view and long exposures, such an observatory will have unprecedented sensitivity to DM in the mass range of ~ 100 GeV to a few PeV. These results, combined with those from other present and future gamma-ray observatories, will likely probe the thermal relic annihilation cross section of Weakly Interacting Massive Particles (WIMPs) for all masses from ~ 100 TeV down to the GeV range in most annihilation channels.

Collaboration(s)

Southern Wide-field Gamma-ray Observatory (SWGGO)

Authors: VIANA, Aion (IFSC-USP); REN, Helena (Max-Planck-Institut für Kernphysik); Prof. HINTON, Jim; DJUVSLAND, Julia Isabell (University of Bergen (NO)); ANDRADE, Micael (São Carlos Institute of Physics - IFSC/USP)

Presenter: VIANA, Aion (IFSC-USP)

Session Classification: DM

Track Classification: Dark-Matter Physics