



Venerdì 13 marzo 2015, ore 14:30, Aula Wataghin

Christoph Weniger
(Amsterdam University)

Indirect searches for WIMP dark matter:
A few signal candidates and many constraints

Despite the enormous success of astrophysical and cosmological research over the last decades, about 85% of the matter content in the Universe remains unknown. The currently leading hypothesis for this so-called dark matter are Weakly Interacting Massive Particles (WIMPs). Strategies for the identification of WIMPs range from searches with particle colliders to searches with underground low-background experiments. I will here focus on a third approach: Indirect searches for self-annihilation products of WIMPs in the gamma-ray and cosmic-ray sky. I will review existing constraints and signal candidates that were discussed in the recent literature. Emphasis will be given to a diffuse extended excess emission that is seen from the Galactic center in gamma-ray observations with the Fermi Large Area Telescope. It has all the properties expected for a dark matter annihilation signal. Although it would be too premature to claim a discovery yet, it is an excellent example for the challenges and techniques, but also opportunities, of indirect dark matter searches in the near future.