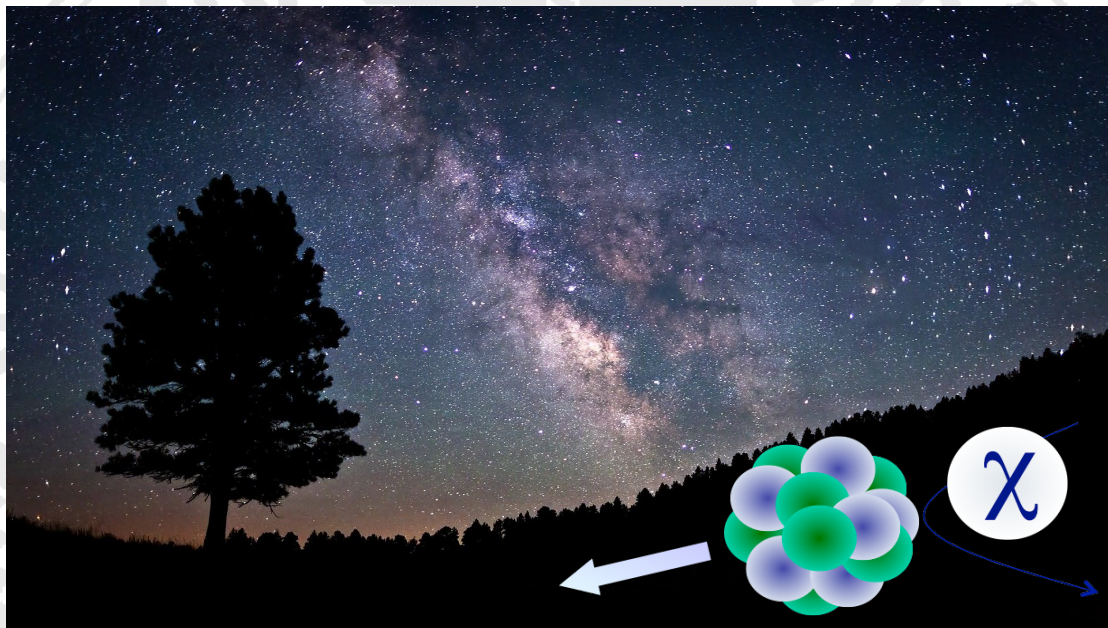


SONDERKOLLOQUIUM

AM 23. SEPTEMBER 2019 UM 9:00 UHR
IM SEMINARRAUM, GUSTAV-MIE-GEBÄUDE



New perspectives on dark matter direct detection

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Next decade will be crucial to explore dark matter interactions with nuclei in direct detection experiments, before ultimately reaching the neutrino floor. Either a signal is observed, or the vanilla paradigm will have to be revisited. After an introduction to the topic, I will discuss recent theoretical developments, such as new signatures stemming from multi-component scenarios, and novel astrophysics-independent tests. The latter can be used to analyse the compatibility among different positive direct detection signals (including annual modulations), and with upper limits. In the last years, extensions to the original framework have been developed in order to compare direct detection signals with limits stemming from neutrinos from dark matter annihilations in the Sun, with collider limits, with local energy density measurements, with the thermal freeze-out paradigm, and with indirect detection upper bounds. In the last part of the talk, I will present a new halo-independent method that has been recently developed to extract the dark matter mass and the ratio of couplings to neutrons and protons from two positive direct detection signals.