

DarkSUSY 6: An Advanced Tool to Compute Dark Matter Properties Numerically

We introduce a radically new version of the widely used DarkSUSY package, which allows to compute the properties of dark matter particles numerically. With DarkSUSY 6 one can accurately predict a large variety of astrophysical signals from dark matter, such as direct detection in low-background counting experiments and indirect detection through antiprotons, antideuterons, gamma-rays and positrons from the Galactic halo, or high-energy neutrinos from the center of the Earth or of the Sun. For WIMPs, high-precision tools are provided for the computation of the relic density in the Universe today, as well as for the size of the smallest dark matter protohalos. Compared to earlier versions, DarkSUSY 6 introduces many significant physics improvements and extensions. The most fundamental new feature of this release, however, is that the code has been completely re-organized and brought into a highly modular and flexible shape. Switching between different pre-implemented dark matter candidates has thus become straight-forward, just as adding new –WIMP or non-WIMP –particle models or replacing any given functionality in a fully user-specified way. I provide a brief overview of the physics behind the computer package, along with the main structure and philosophy of this major revision of DarkSUSY.

Summary

Primary author: BRINGMANN, Torsten (University of Oslo)

Presenter: BRINGMANN, Torsten (University of Oslo)

Session Classification: Dark matter (direct detection)

Track Classification: Dark matter (direct detection)