

## DarkSUSY 6: More than SUSY Dark Matter

*Wednesday, 29 August 2018 17:45 (15 minutes)*

We present 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 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  $\bar{\text{WIMP}}$  or non-WIMP  $\bar{\text{particle}}$  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.

**Primary author:** Prof. BRINGMANN, Torsten (Oslo University)

**Co-authors:** Prof. EDSJÖ, Joakim (Department of Physics and the Oskar Klein Centre, Stockholm University); Prof. BERGSTRÖM, Lars (Stockholm University); Prof. GONDOLO, Paolo (University of Utah); Prof. ULLIO, Piero (SISSA)

**Presenter:** Prof. BRINGMANN, Torsten (Oslo University)

**Session Classification:** Dark Matter

**Track Classification:** Dark Matter