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**Laura Baudis**
**Professor in the Physics Department of the University of Zurich**

## ABSTRACT

### All the dark we cannot see - searching for invisible matter in the Milky Way

Only a small fraction of our universe is directly visible. A large part consists of matter that does not emit radiation in the visible, UV, gamma, infrared or microwave range. From measurements of the rotation curves of galaxies, the mass of galaxy clusters, the distribution of large-scale structures, the cosmic microwave background radiation and the expansion rate of the universe, we know that the luminous matter that makes up galaxies, stars, planets and people accounts for only about 4% of the total matter and energy content of the universe. The rest is “dark”, or invisible, and can so far only be revealed indirectly, via its gravitational influence on visible matter. Dark matter could consist of massive, yet unknown particles that were created in an early phase of the universe. Ever more sensitive detectors are employed around the world to feverishly search for such new, dark particles. The goal is to detect them via their scattering from atomic nuclei in a terrestrial detector and via their transformation into known particles in the Sun, the galactic center and the halo of the Milky Way.

### Short CV Prof. Dr. Laura Baudis

Laura Baudis is a professor in the Physics Department of the University of Zurich. She has a long interest in dark matter and neutrino physics and has worked on dark matter detectors since her days as a PhD student at the University of Heidelberg. She is one of the founders of the XENON dark matter programme, and she leads the DARWIN collaboration with the aim to build an astroparticle physics observatory based on a 50-tonne liquid xenon detector. In 2017, she was awarded an ERC Advanced Grant for her project Xenoscope, which conducts R&D for the construction of the DARWIN time projection chamber. In 2021 she became a member of the Academy of Sciences and Literature Mainz and in spring 2022 she was awarded the Charpak-Ritz Prize by the French and Swiss physical societies.