

# SONDERKOLLOQUIUM

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## The Astroparticle Physics Road to New Physics

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The Standard Model of particle physics is able to describe the world around us with an astonishing precision. However the overabundance of particles over antiparticles, the existence of some non-luminous dark matter and the fact that the feebly interacting neutrinos have masses, suggest that there is new physics awaiting discovery.

In my talk, I will first give an overview of the current status of astroparticle physics. In this context, I will then present my research, which is guided by the aforementioned fundamental questions. I will show examples of how I devise new ways to probe possible extensions to the Standard Model with the help of current and future experiments, and how I develop accurate theoretical predictions for observables tied to new physics, demonstrating their impact for the interpretation of experimental results. Furthermore, I will survey the landscape of experiments that will be of importance in the coming years, and explain why I think it is timely to follow the astroparticle road to new physics. I will conclude by pointing out synergies and complementarities with the research being performed at the Albert-Ludwigs-University of Freiburg.