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Stress-testing the standard model of cosmology with cosmic shear

The concordance Λ CDM model has been spectacularly successful in predicting and explaining a wealth of cosmological observations over the past quarter century. However, it is rather phenomenological in nature and requires the existence of a dark sector that is not included in the standard model of particle physics. As such, it is of utmost importance for fundamental physics to test this model with increasingly precise and accurate observations. One of the most promising of these cosmological probes is the weak gravitational lensing effect of the large-scale structure of the Universe, also known as cosmic shear. In this colloquium, I will give a thorough introduction to this technique, review the current state-of-the-art including tantalising hints for a possible breakdown of the Λ CDM model, and give an outlook to near-future observations and their potential scientific impact, in particular the ESA/NASA Euclid space mission due to be launched this summer.



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Tuesday, 02.05.2023, at 16:30 h, HS C (Technik)

Innsbruck Physics Colloquium,
Organisation: K. Erath-Dulitz, H.-C. Nägerl, T. Schrabback