

Shining light on the dark universe

Prof. Martin Kunz

Département de physique théorique, Université de Genève

Over the last decades, cosmology has turned from a more theoretical, even philosophical enterprise into a data driven area of research, and the parameters describing the cosmological standard model are now mostly being measured to percent accuracy or better. Unfortunately only about 5% of the ingredients in this standard model consist of the usual particles known to us, the rest appears to be composed of a 'dark' kind of matter and an even more mysterious 'dark energy'. I will briefly review the current state of our understanding of the large scale structure of the cosmos and how we arrive at the startling conclusion that we do not understand 95% of the contents of the universe. I will focus on the results from the recent second data release by the European Planck satellite that has been measuring the left-over radiation from the big-bang. I will then specifically look at the state of our knowledge concerning the dark energy, and finish with a brief outlook of some of the things that we hope to learn in the next decade or two.