

Dark Matter: today and tomorrow

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Since the beginning of the XX century appeared a vast body of evidence indicating that our Universe is "dark". The known particles make just 5% of it, while the dark components (dark matter and dark energy) constitute the rest. While the densities of these species are measured with a great precision, little is known about their origin. In my talk I will focus on one of these components -- dark matter. I will review the evidence for its presence at very different spatial scales, from individual galaxies to the whole Universe. We will discuss criteria which should fulfil a good dark matter candidate and review several popular ones -- sterile neutrinos, weakly interacting massive particles and primordial black holes. We will review the ways in which these objects could be detected, as well as existing bounds and limits on their properties. We will conclude our discussion with a review of the progress that could be made with the new generation of instruments, expected to see the first light within the next 10-15 years.