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Colloquium of the Physics Department of ENS

Mardi 21 Janvier 2020, 17 :15
DPT-PHYS-ENS, Amphi Jaurès - Département de Physique de l'ENS 24 rue Lhomond 75005 PARIS
Domaines : physics

Titre : *Cosmology with the Square Kilometre Array*

Orateur : **Laura Wolz (Department of Physics and Astronomy, The University of Manchester)**

Résumé : *The Square Kilometre Array (SKA) is an international radio observatory administered by ten member countries, guided by scientific contributions of thousands of scientists and engineers around the globe. The SKA will enable pioneering cosmological surveys, probing immense volumes of the Universe which to-date have been unexplored at radio wavelengths. These surveys will deliver entirely new probes to test our understanding of the history of the Universe through measuring the large-scale structures within it. This will be done by observing emission in both radio continuum and the 21 cm spectral line of neutral hydrogen (HI). The radio continuum observations will measure the shapes and positions of tens of millions of galaxies out to* $z = 1$ *and above, allowing us to measure the effects of weak gravitational lensing and spatial correlations that can reveal the form and growth of dark matter structures over time. The HI observations will produce a spectroscopic galaxy catalogue at z ¡ 0.5, as well as HI intensity maps tracing the underlying matter distribution up to* $z = 6$*. These surveys will enhance our understanding of various aspects of cosmic history, including the faint imprints of the primordial period of inflation, the early stages of galaxy formation, as well as the nature of gravity, dark energy and dark matter which determine the growth of late time large-scale structure.*