

Line Intensity Mapping targeting astrophysics and cosmology

Friday, 6 November 2020 09:00 (20 minutes)

Line Intensity Mapping (LIM) targets the Universe from present time up to redshifts beyond ten when the first galaxies formed, from small to largest scales. Similar to CMB measurements, power spectra of emission line fluctuations tell both about structure growth and underlying cosmology as well as astrophysical processes. Imagine the information encoded in thousands of intensity maps at different redshifts and for multiple emission lines.

In this talk I will review LIM as a test for cosmology and astrophysics during the dark ages and the epoch of reionization, with power, cross-power spectra and global temperature signals probing structure formation and properties of astrophysical sources. As examples 1) cosmological volumes of 21cm fluctuations and their global temperature signal in general modified gravity scenarios are highlighted to measure deviations from the gravitational constant G and a possible dark matter – dark energy coupling, 2) synergies for probing astrophysics with Lyman-alpha and H-alpha lines are explored.

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