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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Astrophysics and Relativity Seminar

Title : Overview of 21cm experiments probing the Epoch of Reionisation and updates on the Square Kilometre Array

Speaker : Nithyanandan Thyagarajan (CSIRO, Australia)

Date : Wednesday, 24th January 2024

Time : 03:00 PM (IST)

Abstract : Establishing the history of the Universe from the CMB era to the present day is a key objective for astrophysics and cosmology. After the recombination era, matter in the Universe remained predominantly neutral and is referred to as the Cosmic Dark Ages. The subsequent growth of matter overdensities under gravity led to the formation of first self-luminous objects like stars, galaxies, and black hole-powered quasars at about half-billion years after the Big Bang, referred to as the Cosmic Dawn. These objects started injecting ionising radiation back into the intergalactic medium significantly enough to re-ionise the neutral Hydrogen in the Universe. This period, known as the epoch of reionisation (EoR) evidently ended about 1 billion years after the Big Bang, and signifies a major astrophysical phase transition from a neutral to a re-ionised Universe. Despite its significance, it has not been probed extensively. Using redshifted 21cm spectral line signature of Neutral Hydrogen has emerged as one of the most promising probes of the EoR. Several 21cm experiments are already underway. I will outline the approaches and progress made by the current generation of 21cm EoR experiments. A powerful next-generation instrument, whose key aim among many is to detect and characterise the EoR is the Square Kilometre Array (SKA). Besides describing its capabilities, I will present updates on the ongoing construction activities.

Venue : Offline: Madhava Lecture Hall (ICTS)

Online: Please click on the below link to join the seminar

https://icts-res-in.zoom.us/j/94795916123?pwd=SDFzUjBHNWtDZGUzMFE1QXFZS3dNQT09

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