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The Epoch of Reionisation through the low-frequency radio lens

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About a billion years after the Big Bang, the Epoch of Reionisation saw the first light sources in the Universe slowly ionise the primordial atoms of the surrounding IGM. Learning about this distant epoch has the potential of unveiling crucial information about the formation of the first stars, galaxies, and early black holes, which sourced it.

One particularly promising probe of this epoch is the cosmological signal from the 21cm spectral line of neutral hydrogen. However, its observation remains elusive: Attempted measurements are still plagued with foregrounds and systematics, whilst modelling uncertainties prevent us from extracting precise constraints from existing and forthcoming datasets.

In this talk, I will describe what the high-redshift 21cm signal can tell us about the history of our Universe and of its first luminous objects. I will present the analysis, observational, and instrumental strategies developed all around the world to access this elusive signal. These considerable efforts have led to significant progress in recent years, including the first claimed detection of the global, sky-averaged 21cm signal and ever lower upper limits on the power spectrum of its spatial fluctuations by SKA precursors and pathfinders. I will then focus on the improvements we can expect with the SKA and namely on the potential of 21cm intensity maps to constrain the Epoch of Reionisation.

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Session Classification: Cosmic backgrounds from radio to far-IR

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