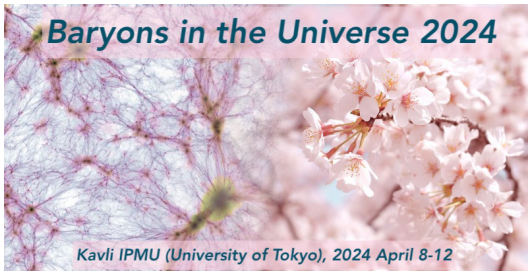

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Towards precision cosmology with FRBs

Thursday, 11 April 2024 10:00 (25 minutes)

"Fast radio bursts (FRBs) are extragalactic radio transients of typcially ~ms duration. Their extreme luminosities allow them to be observed at cosmological distances, with optical follow-up observations identifying their host galaxies at redshifts up to 1.01. The key characteristic of FRBs is their dispersion measure - a frequency dependent delay due to propagation through astrophysical plasmas. This allows FRBs to trace the total column density of ionised gas between their source and the Earth. Cosmological studies with FRBs have so-far targeted the 'missing' matter, Hubble's constant, and Galactic halos intersected along the line of sight, with proposals to also identify Helium reionisation.

This talk will review the current status of cosmological studies with FRBs, covering detections methods, host galaxy follow-up, and analysis of baryonic distributions. I will then discuss the next generation of such studies with FRBs, highlighting both the promise of the technique for performing precision measurements, and current sources of uncertainty that need to be overcome if FRBs are to fulfill this promise."

Presenter: JAMES, Clancy