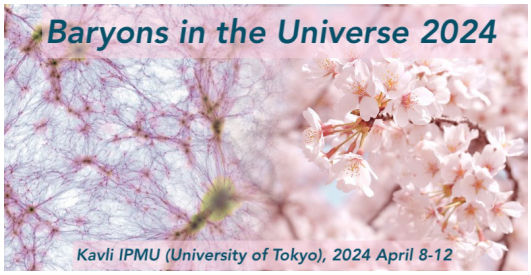

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The Comic Baryons illuminated by the Fast Radio Bursts

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

Despite the, yet, unconstrained nature, the Fast Radio Bursts (FRB) became unique probes of various astrophysical and cosmological phenomena. For instance, FRBs were paramount in resolving the so-called 'missing baryons problem', yet the major questions remained regarding the relative distribution of cosmic baryons in the diffuse IGM vs CGM of the galactic halos. Unraveling the exact partition of cosmic baryons would inform the models of galaxy formation and feedback mechanisms. However, constraining the relative distribution of cosmic baryon is challenging due to the large cosmic variance induced by the unknown density field and intervening galactic halos along the FRB sightlines. In my talk, I will discuss how this issue can be mitigated by measuring the spectroscopic redshift distribution of foreground galaxies in front of localized FRBs in order to map out the cosmic web as well as characterise the intervening galactic halos. I will describe the FLIMFLAM, an ongoing 40-night spectroscopic survey on the Anglo-Australian Telescope (and other facilities) that will map the foregrounds of ~20-30 localized FRBs primarily detected by CRAFT/ASKAP and localized by the F^4 collaboration. I will present the analysis of the FLIMFLAM' first data release that includes 8 FRB sightlines. I will show the first direct constraints on the relative partition of cosmic baryons between the CGM and IGM, as well as the estimate on the average host galaxy contribution to the dispersion measure.

Presenter: KHRYKIN, Ilya