

Seminarium Astrofizyczne
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ul. Pasteura 7, sala 404

Tetsuya Hashimoto
(Institute of Astronomy National Tsing Hua University)

Recent three discoveries from NTHU/Taiwan cosmology group

I will present my recent papers on (i) the luminosity-duration relation of fast radio bursts (FRBs), (ii) ALMA observations of Gamma-Ray Burst (GRB) host galaxies, and (iii) a blue cluster in the local Universe. Brief summaries of each paper are as follows.

(i) Luminosity-duration relation of fast radio bursts We discovered an empirical correlation between luminosity and duration of FRBs. We propose a new distance measure using the relation of FRBs, which can reach more distant Universe than type Ia supernovae in quantity. This method can potentially reveal the time variability of the dark energy, which is one of the central foci of observational cosmology.

(ii) SFRs of two GRB host galaxies at $z \sim 2$ and a [CII] deficit observed with ALMA We discovered a new parameter to characterize GRB host galaxies, [CII] deficit, by overcoming a serious dust-extinction problem of GRB host galaxies. Possible parameters controlling the deficit include the metallicity, initial mass function, and gas density.

(iii) A young galaxy cluster in the old Universe We discovered a 'blue cluster', that is a local galaxy cluster with an unprecedentedly high fraction of blue star-forming galaxies yet hosted by a massive dark matter halo. The blue cluster challenges the current standard understanding of galaxy formation under the Lambda CDM Universe.

Serdecznie zapraszam,

Agnieszka Majczyna