



Contribution ID: 550

Type: Oral

Anisotropy in Pantheon+ supernovae

We employ Maximum Likelihood Estimators to examine the Pantheon+ catalogue of Type Ia supernovae for large scale anisotropies in the expansion rate of the Universe. The analyses are carried out in the heliocentric frame, the CMB frame, as well as the Local Group frame. In all frames, the Hubble expansion rate in the redshift range $0.023 < z < 0.15$ is found to have a statistically significant dipolar variation exceeding $1.5 \text{ km s}^{-1} \text{ Mpc}^{-1}$, i.e. bigger than the claimed 1% uncertainty in the SH0ES measurement of the Hubble parameter H_0 . The deceleration parameter too has a redshift-dependent dipolar modulation at $> 5\sigma$ significance, consistent with previous findings using the SDSSII/SNLS3 Joint Lightcurve Analysis catalogue. The inferred cosmic acceleration cannot therefore be due to a Cosmological Constant, but is probably an apparent (general relativistic) effect due to the anomalous bulk flow in our local Universe.

Field of contribution

Author: SAH, Animesh

Co-authors: TSAGAS, Christos (Aristotle University of Thessaloniki); RAMEEZ, Mohamed (Tata Institute of Fundamental Research); Prof. SARKAR, OXFORD, Subir (University of Oxford)

Presenter: SAH, Animesh

Track Classification: Astroparticle physics and cosmology