



Contribution ID : 102

Type : not specified

The Pantheon+ Supernova Sample and Cosmological Constraints

Tuesday, 30 May 2023 17:10 (25)

I will detail leaps of progress in Type Ia Supernova Cosmology (SNIa) that have culminated in the recent Pantheon+ cosmological analysis of 1701 SNIa light curves. While this SN dataset places strong constraints on dark matter, dark energy and solidify Lambda CDM, Pantheon+ is also used in the recent SH0ES constraints of the local value of the Hubble Constant (the current expansion rate of the universe) that are now in 5sigma tension with the inferred value from the cosmic microwave background. I will detail the formulation of the SN dataset, internal consistency checks, and our robust treatment of systematic uncertainties that have built confidence in the cosmological measurements and that also pave the path for future surveys.

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