

Evidence of deviations from Λ CDM from a new Hubble Diagram of Quasars

martes, 15 de septiembre de 2026 9:50 (25)

I present new cosmological fits to a Hubble diagram built from supernovae and a homogeneous quasar sample spanning a redshift interval $z = 0.7\text{--}3.5$. The quasar distances are derived from the non-linear relation between X-ray and UV luminosities, and the sample is selected to minimize dust reddening, gas obscuration, host-galaxy contamination, and selection biases as described in the companion paper. This provides high-quality constraints in a redshift range otherwise poorly covered by Type-Ia supernovae. The main results are: (1) the combined Hubble diagram shows strong ($> 4\sigma$) tension with the standard flat Λ CDM model at $z \geq 1.5$; (2) in the overlap region, the quasar and supernova Hubble diagrams are fully consistent, supporting a common distance scale; (3) allowing for an evolving dark-energy equation of state yields a significantly better fit, with w_0 and w_a values compatible with those favored by recent DESI results; (4) our quasar Hubble diagram and cosmological constraints agree closely with an independent analysis based on $\sim 6,000$ quasars standardized via variability distances (Dutra et al.~2026). The convergence of two independent quasar methods strengthens the case that the deviation from flat Λ CDM at high redshift is not driven by sample-specific systematics.

Primary author(s) : RISALITI, Guido (Università di Firenze)

Presenter(s) : RISALITI, Guido (Università di Firenze)

Clasificación de la sesión : Morning Session (Tuesday)