

Quasars as high redshift standard candles: the L_X - L_{UV} relation at high redshift

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A tight non-linear relation between the X-ray and the optical-ultraviolet luminosity has been observed in AGN over 5 orders of magnitude and up to high redshift.

This suggests a coupling between the disk, emitting the primary radiation in the UV band, and the hot corona emitting in the X-ray.

In this work, we have studied the $L_X - L_{UV}$ relation for a sample of high-redshift ($z > 4$) quasars, selected on the basis of their spectral properties and the quality of the available observations in both X-ray and optical/UV bands.

The relation shows no-evidence of evolution with redshift, which indicates a universal physical mechanism regulating the energy transfer process in the inner regions, and the observed dispersion is lower than in previous estimates.

The non-linearity of the relation provides a new, powerful way to estimate the absolute luminosity, turning quasars into a new class of standard candles that can provide an important contribution in the determination of the cosmological parameters, probing cosmological time not achievable with other observational methods.

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