

Phenomenology 2021 Symposium



Contribution ID: 1373

Type: **Cosmology**

Quasars as New Standard Candles

Monday 24 May 2021 17:30 (15 minutes)

A previous analysis of light curves from 13 quasars in the MACHO survey has shown some correlation among short time scale variations. Particularly, in the quasar's rest frame, linear segments over time scales on the order of 100 days indicate a common slope. Though the source of this feature is at present unknown, such a commonality could allow one to determine the relative redshift of one quasar to another by comparing light curves thereby adding another benchmark to the cosmic distance ladder. We here extend the previous analysis to the remaining 46 well-sampled quasars in the MACHO survey and an additional ~9200 under-sampled quasars from the Sloan Digital Sky Survey. The feature proves to be persistent among the majority of quasars but requires the sampling rate of the quasar to be on average once every 15 days to reliably estimate the redshift.

Summary

Observed short time scale variations in quasar light curves could permit a new benchmark on the cosmic distance ladder.

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Session Classification: Cosmology II