

The restless nature of AGN: 10 years later



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Modeling the effects of quasar variability source geometry on light curves

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Quasar variability is often modeled simplistically as originating from a point-like lamp post geometry with a damped random walk time dependence. We create more realistic simulations of variability propagation through quasar structure using a flexible and physically motivated quasar model that incorporates lensing by the SMBH, disk and broad-line reprocessing, and extended geometry of the variability source. Using this model, we derive realistic transfer functions and simulate LSST-like multi-band light curves for a wide range of quasar structure parameters and variability source geometries. We use these to explore the degree to which deviations from the simplistic lamp post models can be determined in upcoming time-domain surveys. We also analyze light curves from SDSS and other existing surveys to make preliminary constraints on the validity of these models.

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