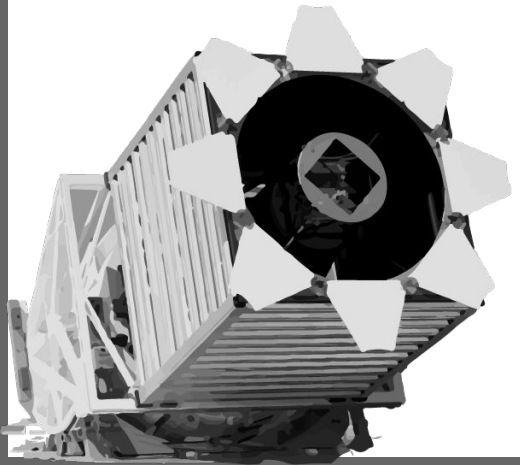
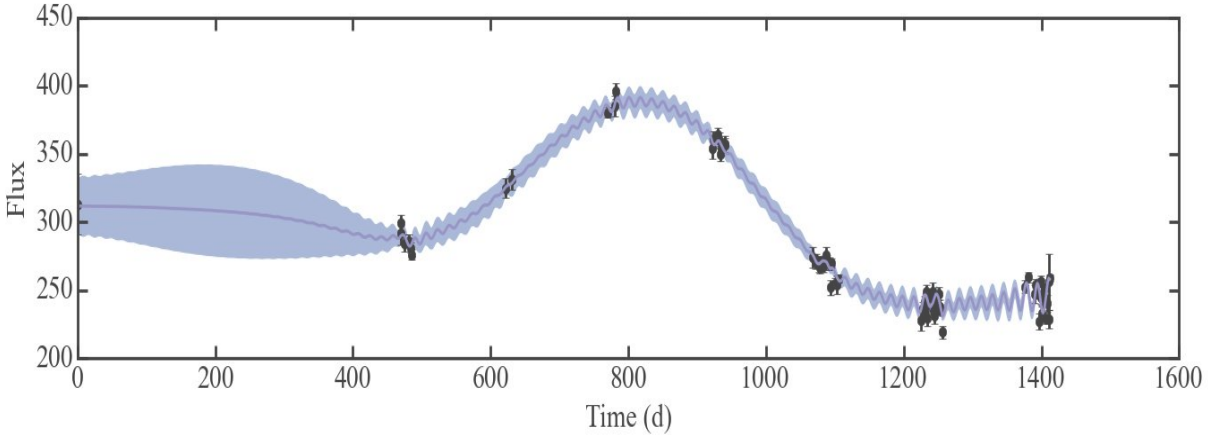
CARMA Analysis of Light Curves from SDSS in Stripe 82

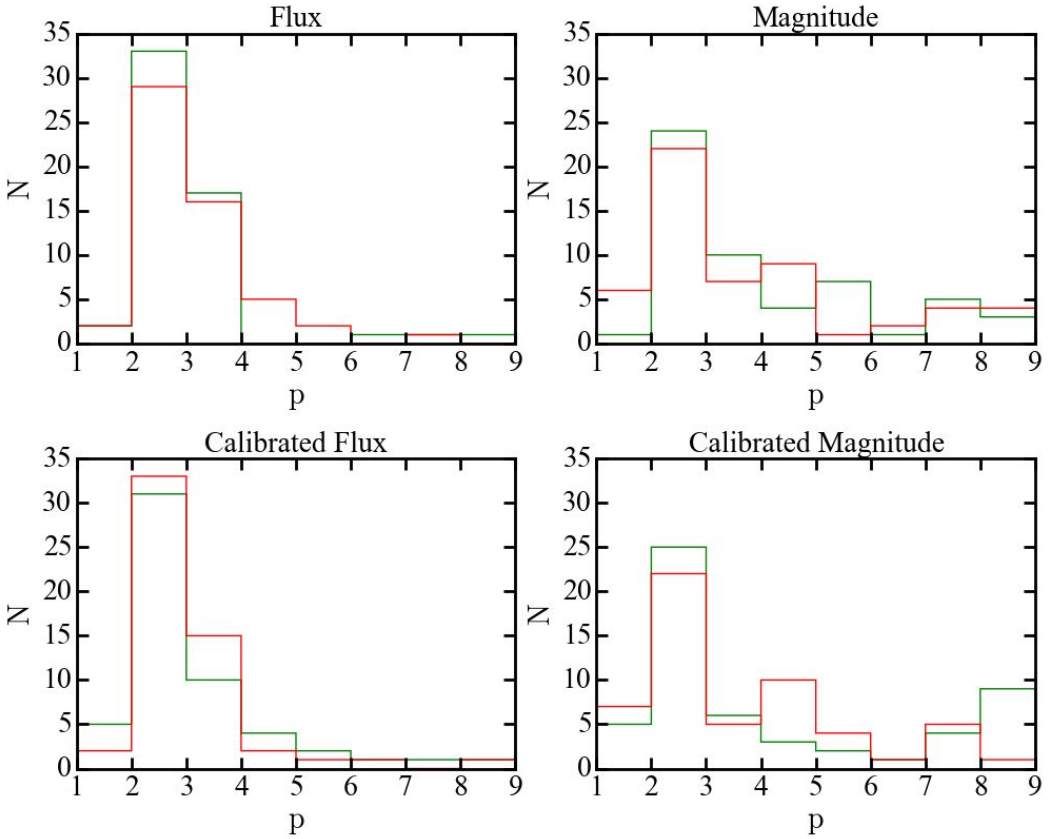
Jack O'Brien





Quasar Day 2016
Drexel University

Which Model Best Describes SDSS Light Curves?

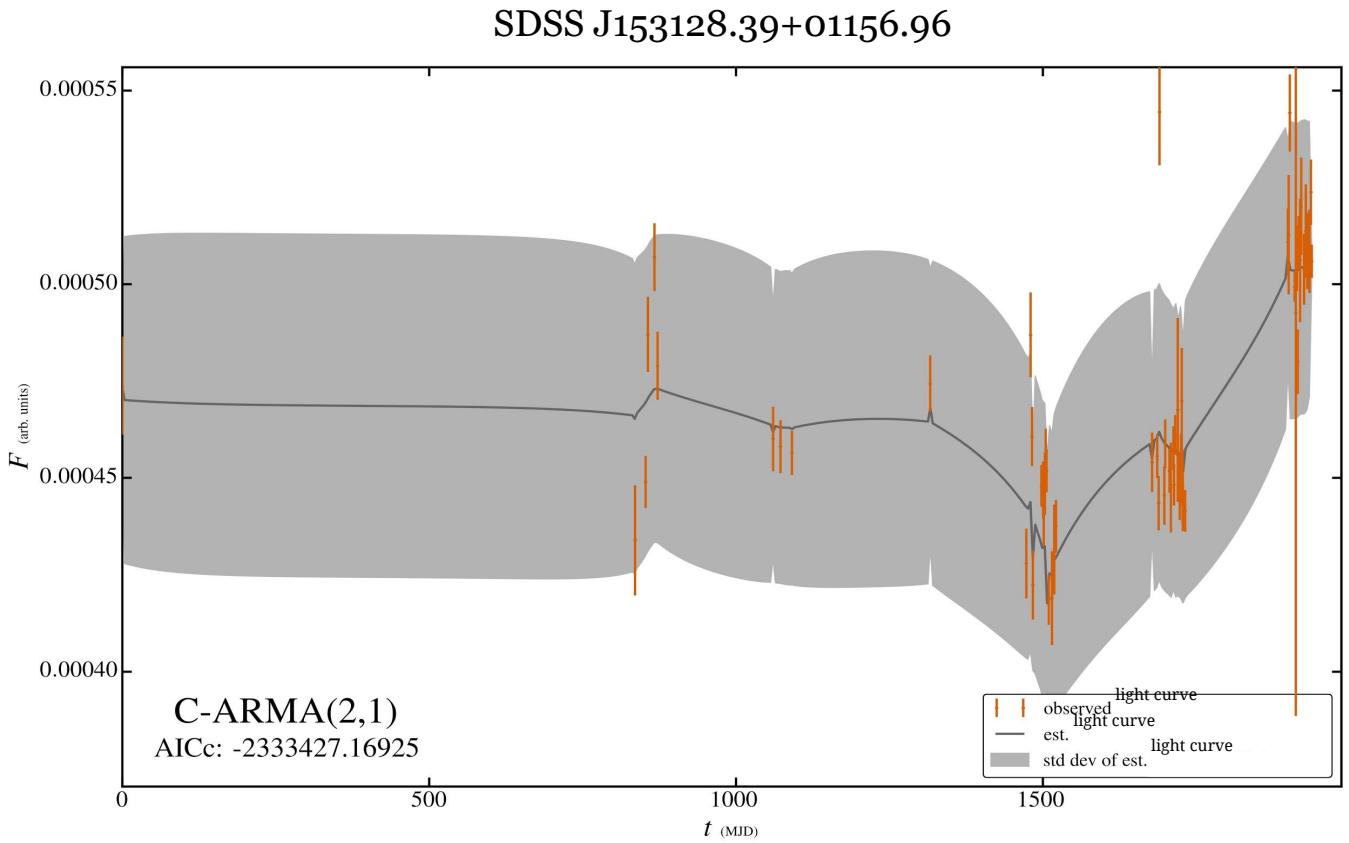


CARMA(2, 0) and CARMA(2, 1) models are most often selected as the best description of SDSS light curves.

The distribution is more spread out when analysing light curves in terms of magnitudes.

The distribution becomes tighter after applying Željko Ivezić's standard stars calibrations.

Sample SDSS Light Curve

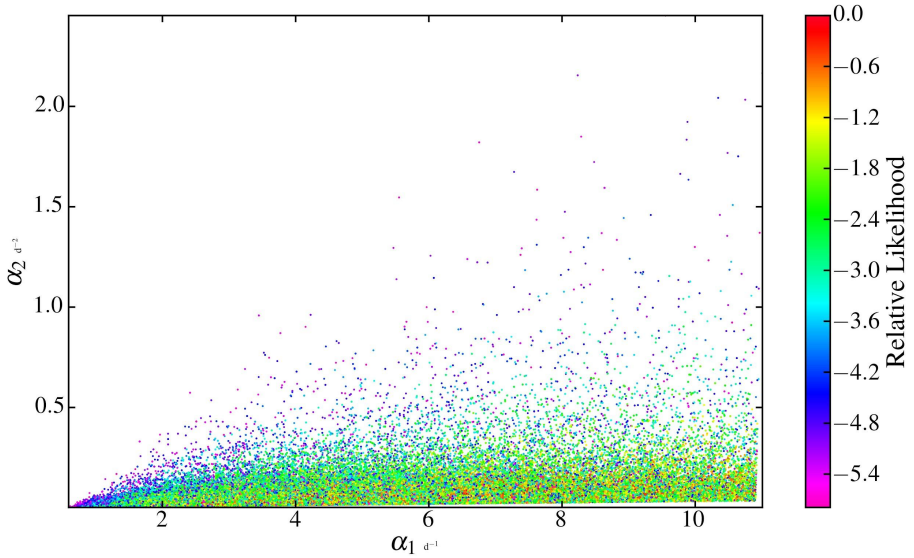


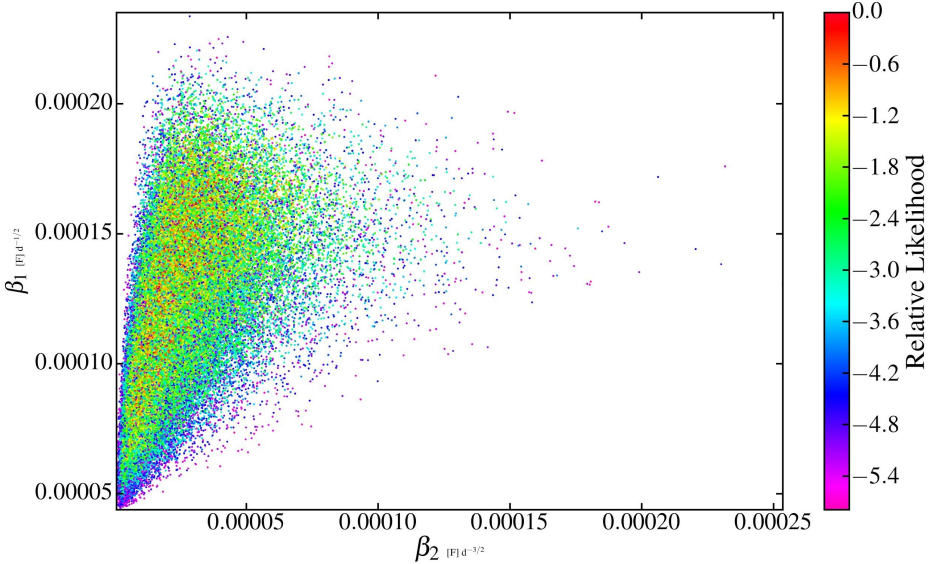
Stripe 82 has been imaged multiple times by SDSS.

Quasars in SDSS are irregularly and infrequently sampled with only 60 - 70 observations over a period of 10 years.

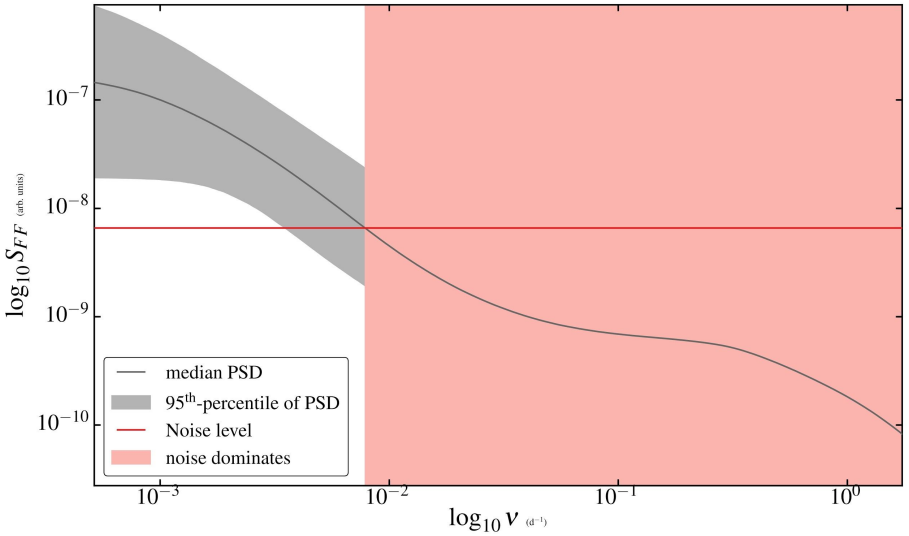
This creates difficulty in probing short timescales and accurately determining model parameters.

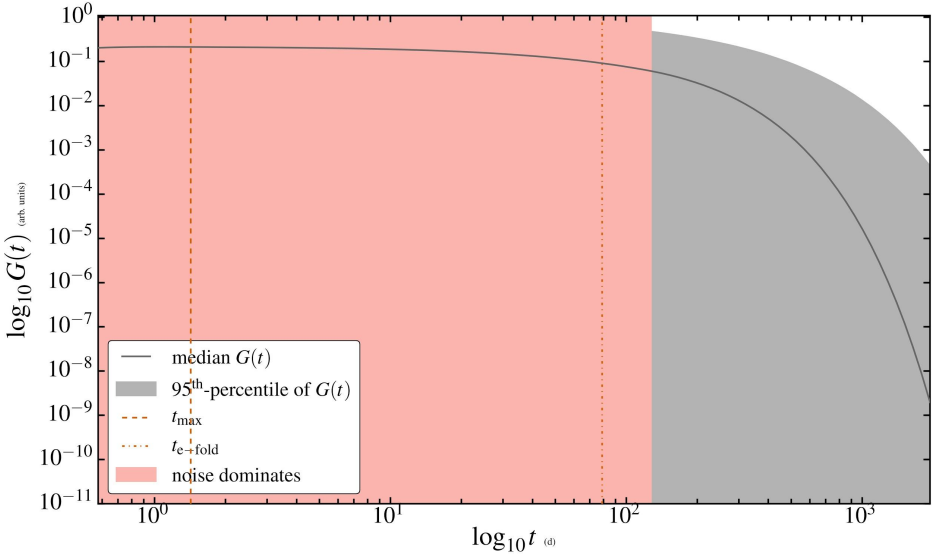
Distribution of Autoregressive and Moving Average Coefficients





Power Spectral Density and Green Function





Effects of Calibration