

Millisecond Pulsar Timing

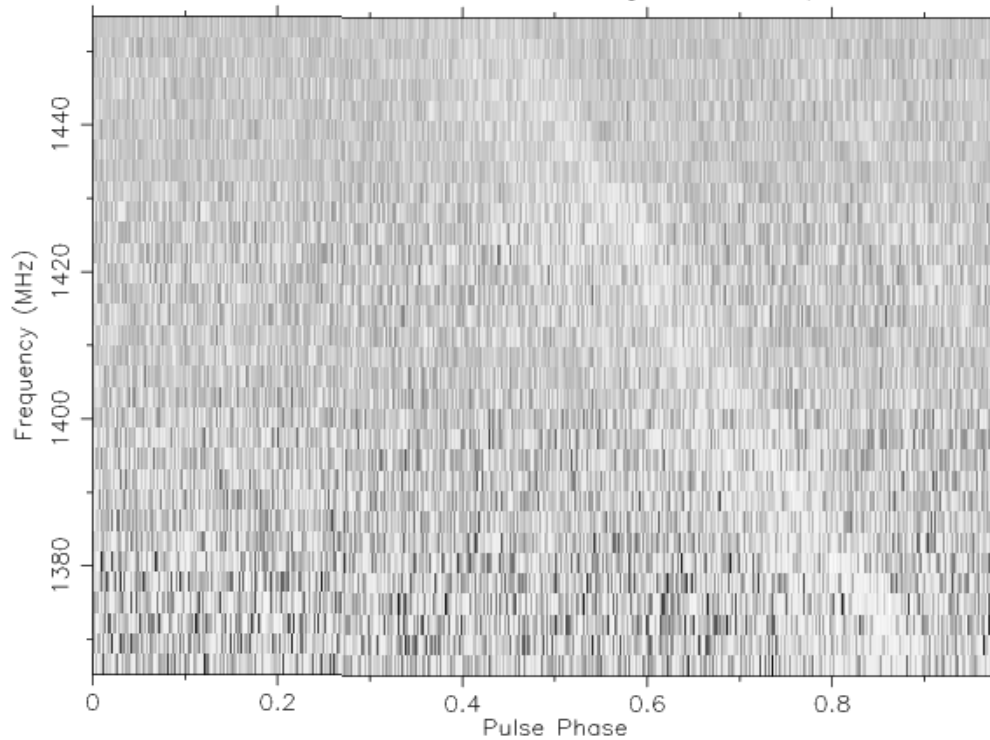
- starting point: bunch of files, each for 10 min of observation (PSRchive)
- plot these files as:

dedispersion

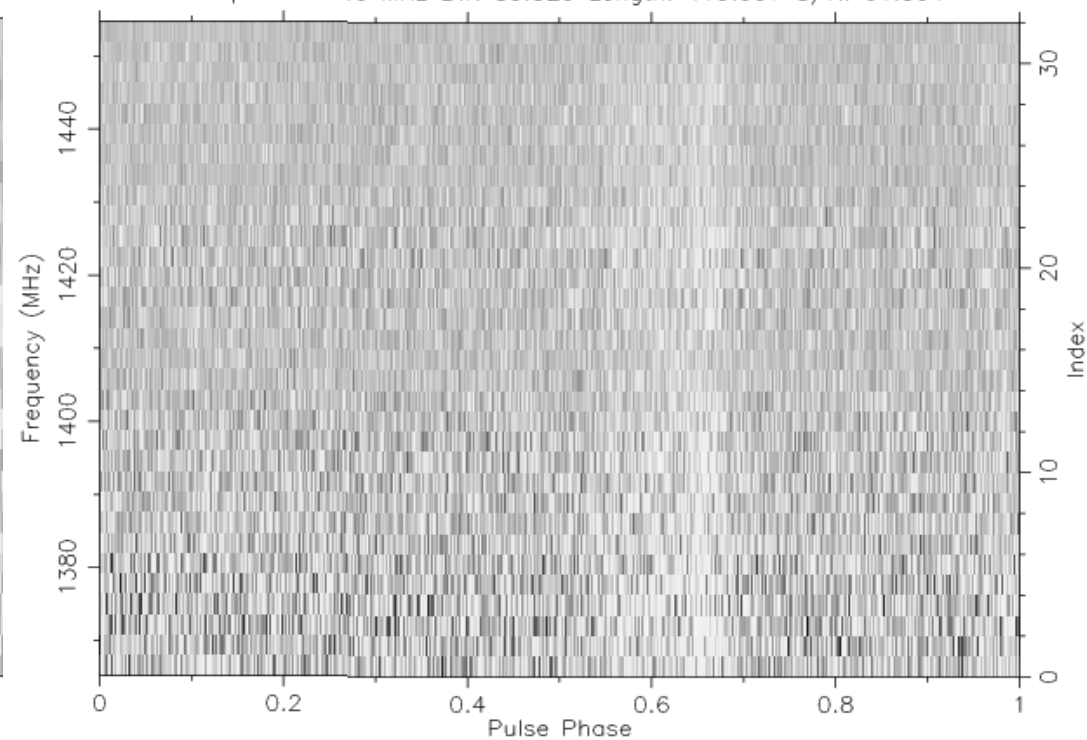
before

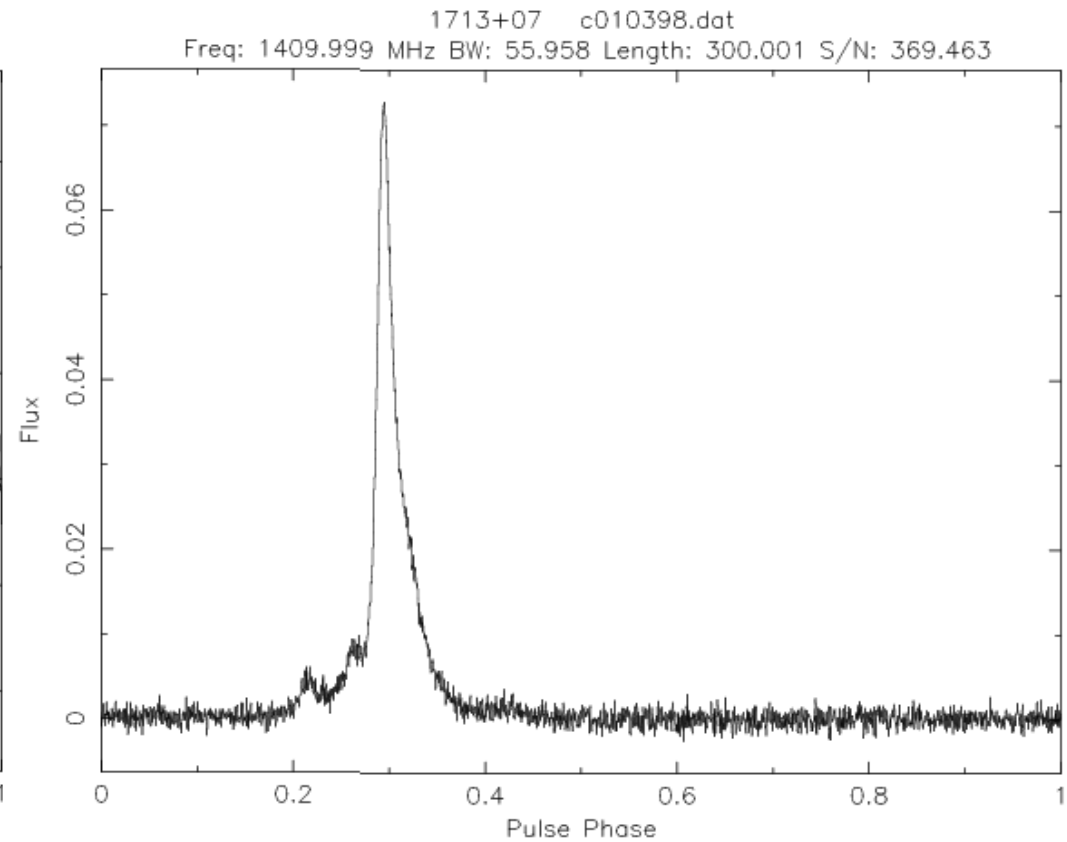
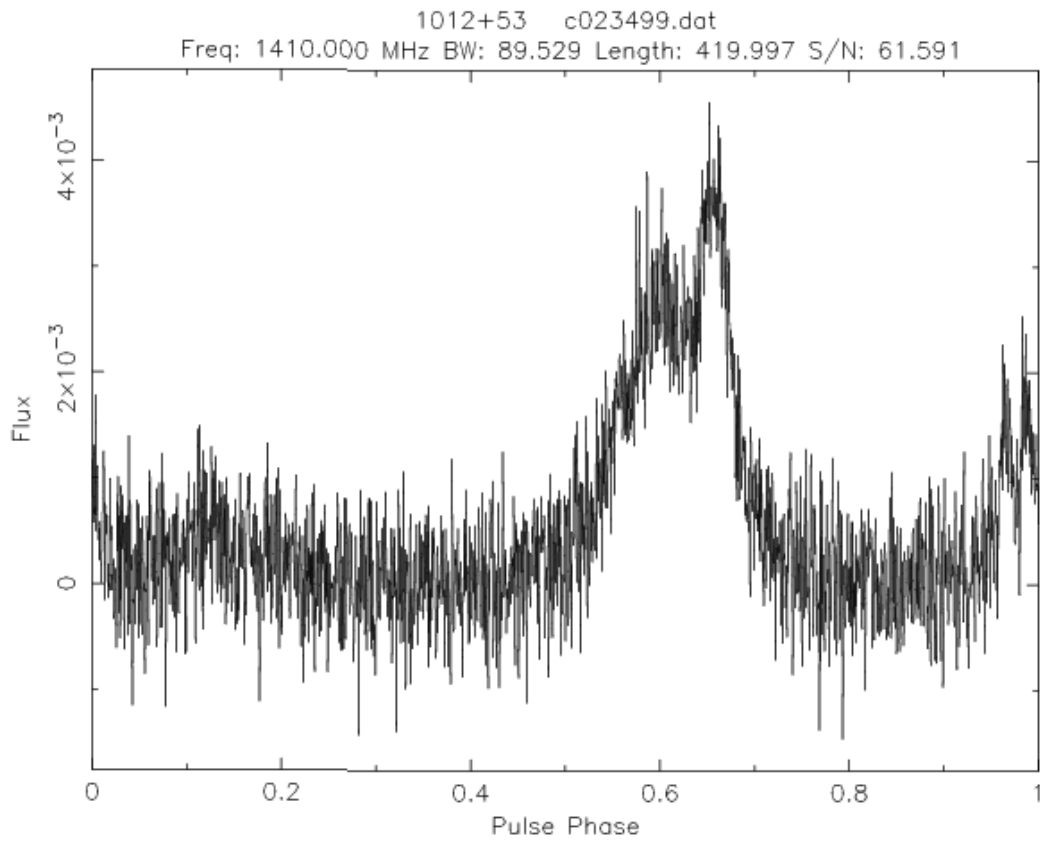
after

1012+53 c023499.dat
Freq: 1410.000 MHz BW: 89.529 Length: 419.997 S/N: 61.593



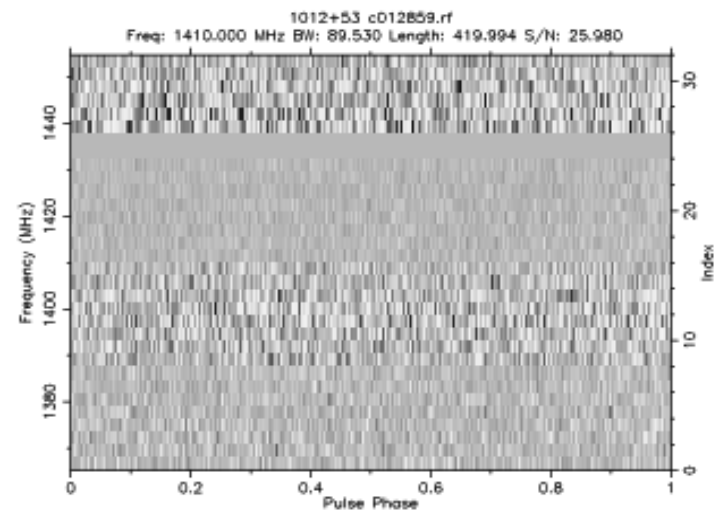
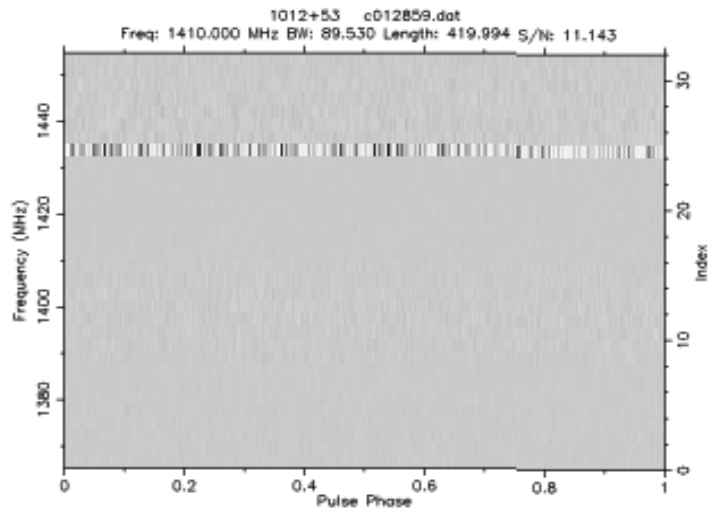
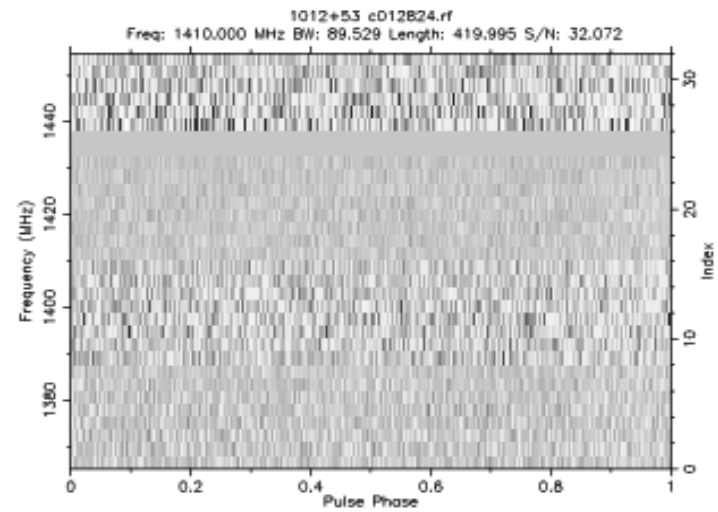
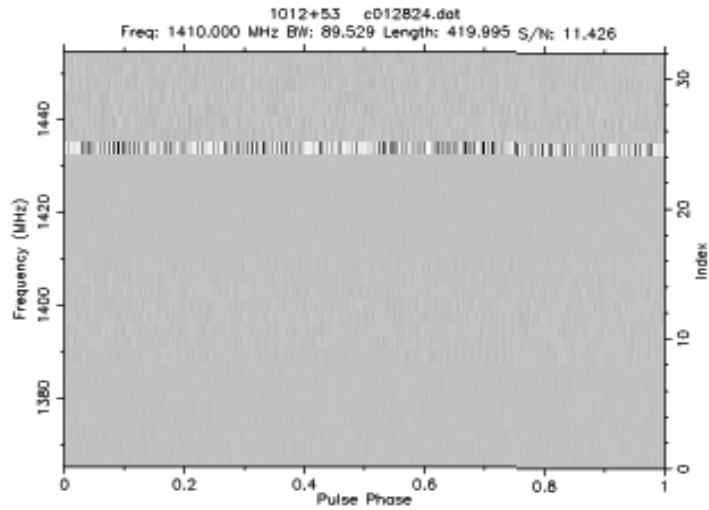
1012+53 c023499.dat
Freq: 1410.000 MHz BW: 89.529 Length: 419.997 S/N: 61.591





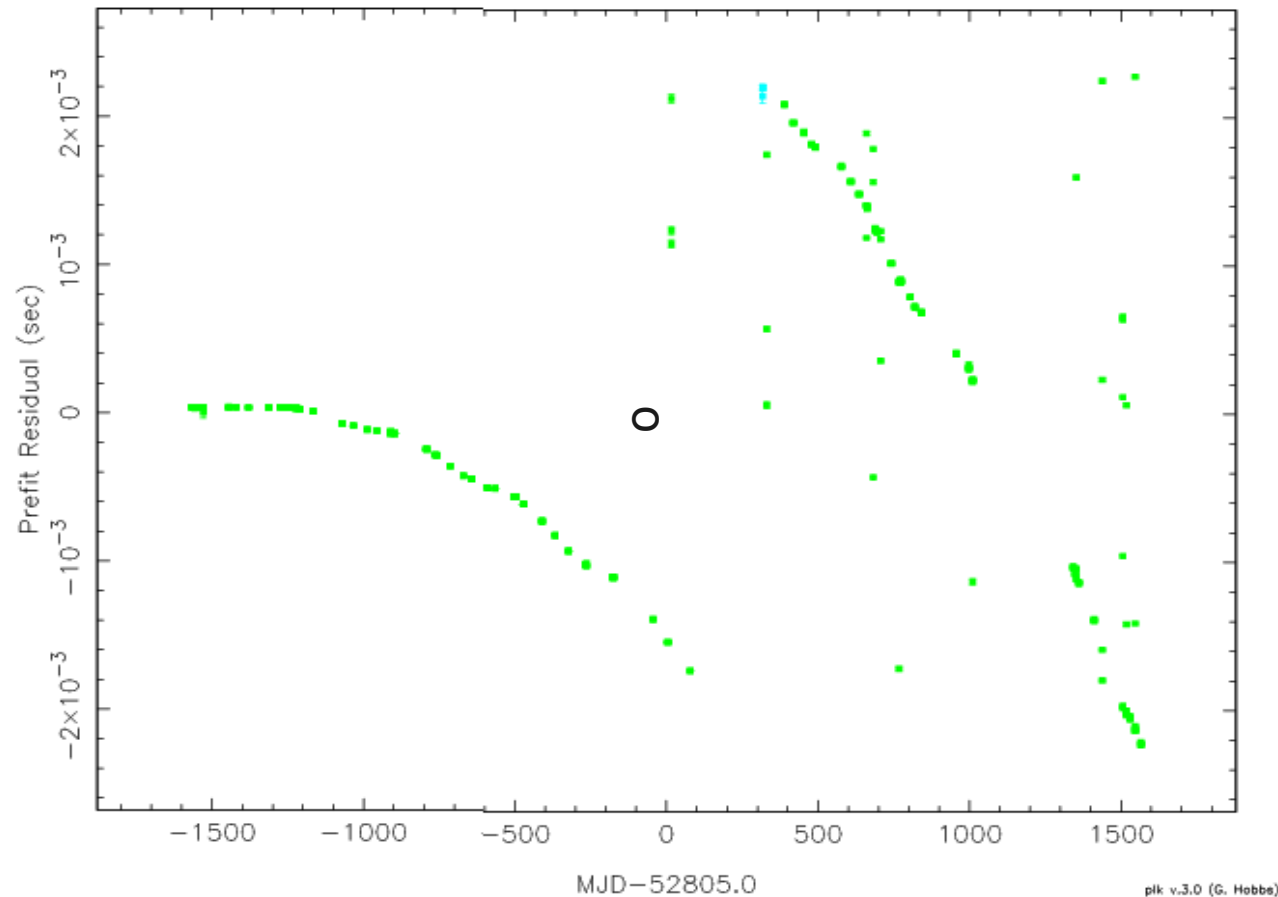
pulse profiles

- get rid of RFI



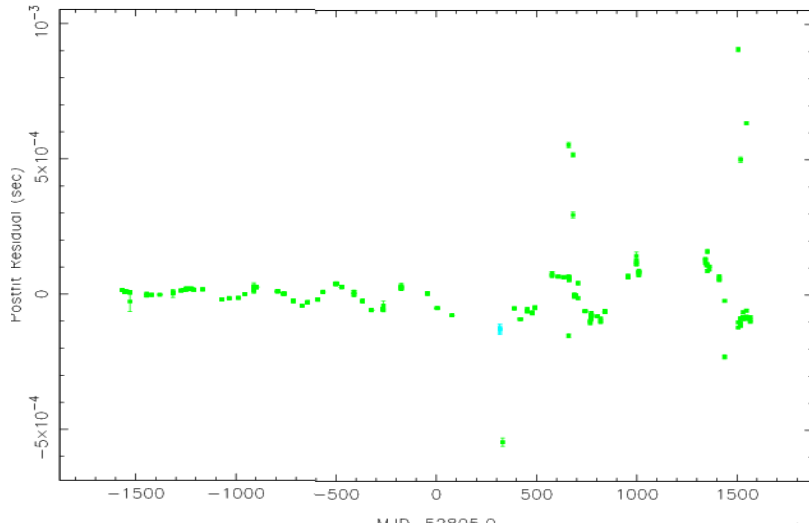
- overlap and average all observations to get one template profile
- get **Times Of Arrival**
- use *TEMPO2* for residuals

1713+0747 (rms = 1071.693 μ s) pre-fit



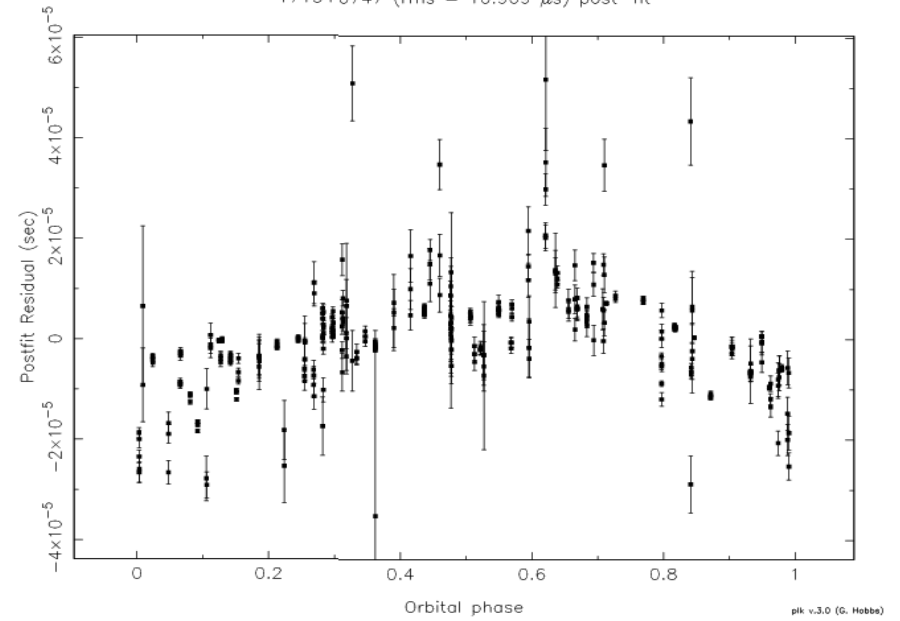
pulse period

1713+0747 (rms = 13.233 μ s) post-fit



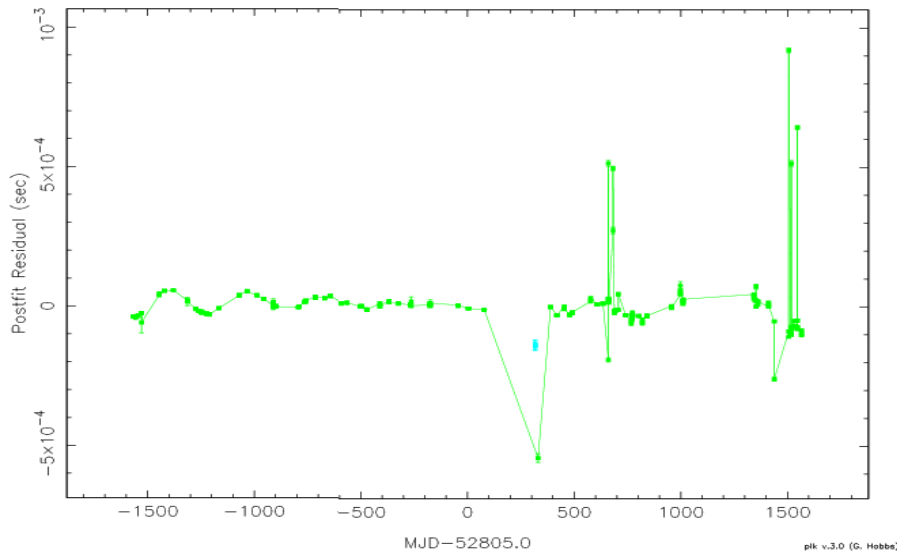
proper motion

1713+0747 (rms = 10.909 μ s) post-fit



position (RA/DEC)

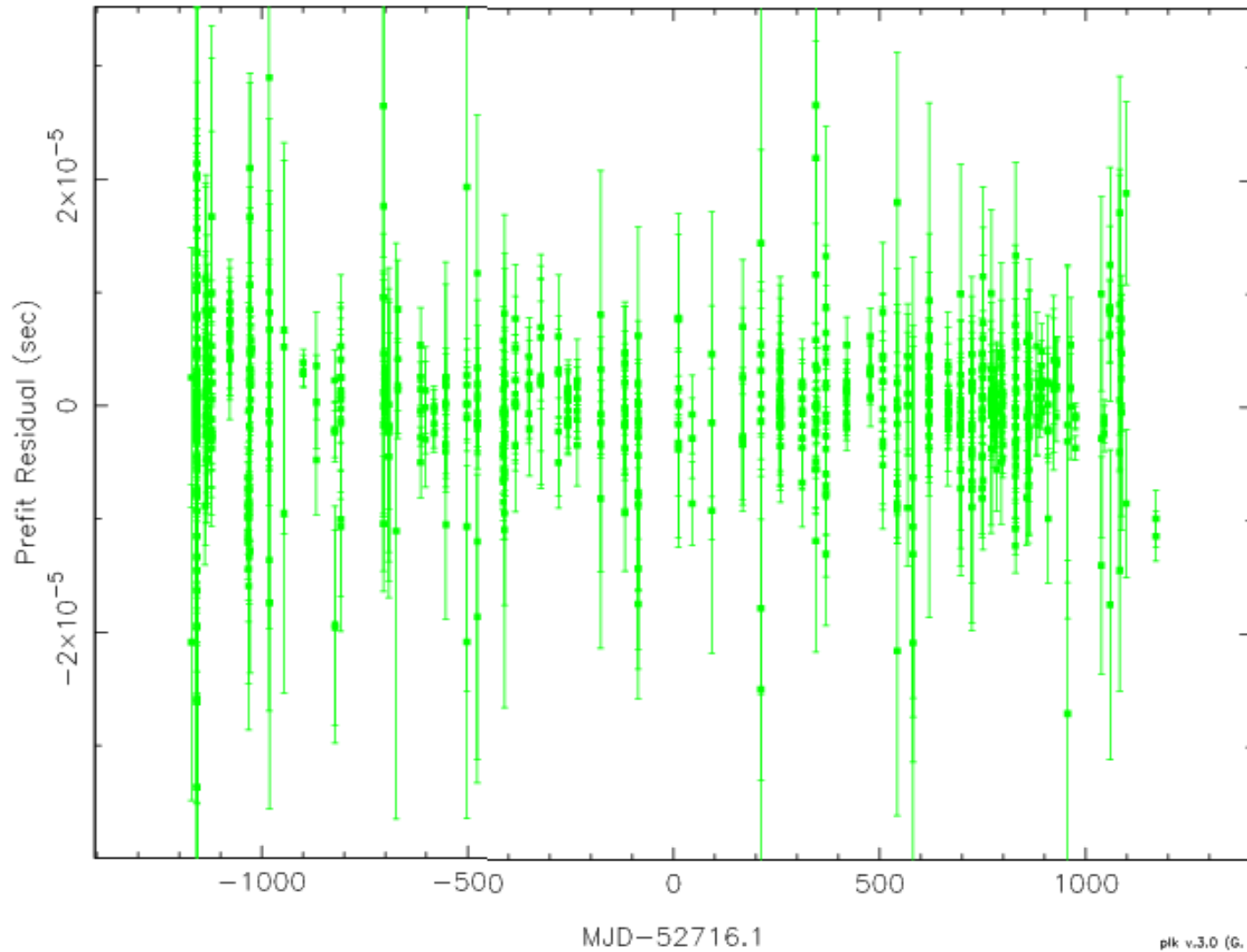
1713+0747 (rms = 95.156 μ s) post-fit



Keplerian parameters...

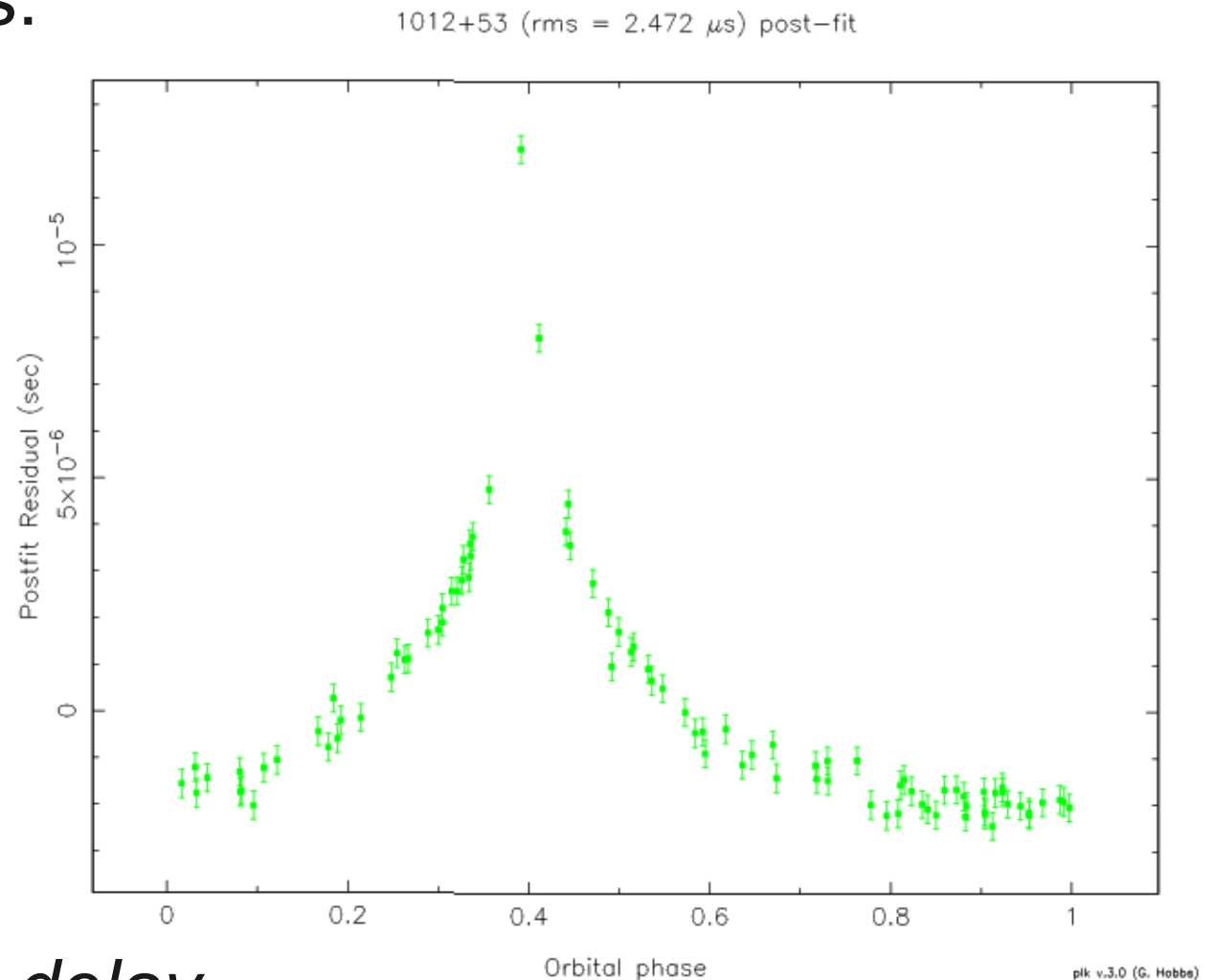
final residuals

1012+53 (rms = 3.077 μ s) pre-fit



playing with the parameters...

...setting the companion mass to zero in the timing model yields:



Shapiro-delay

conclusions

- using timing model:
astrometric, spin- and binary parameters
- using simulated data:
getting feeling for influence of parameters on measurement