Comparison chart

Written by Pavel Sobolev and located here. Release version: 0.7.0.

Used abbreviations:
KIC – ID from Kepler Input Catalog;
KID – Kernel Identifier;
KL – Kernel Link (for *george*);
CNL – Notebook Link (*celerite*);
GNL – Notebook Link (*george*);
TP – 'True' value of the period of a star [days];
IP – Inferred value of the period obtained by
minimizing the negative marginalized likelihood [days];
RCL – Result Link (PDF, *celerite*);
RGL – Result Link (PDF, *george*)

KIC	KID	KL	CNL	GNL	TP	IP	RCL	RGL
1430163	Base	link	link	link	3.88 ± 0.58	≈ 3.7897	link	link
	DS	link	link	link	3.88 ± 0.58	≈ 3.8751	link	link

Base

$$k(\tau) = \frac{a}{2+b} e^{-\tau/c} \left[\cos\left(\frac{2\pi\tau}{P}\right) + (1+b) \right]$$

Parameters:
a $\longrightarrow$ log_amp;
b $\longrightarrow$ log_factor;
c $\longrightarrow$ log_timescale;
P $\longrightarrow$ log_period

Bounds:
log_amp: (-10.0, 0.0);
log_timescale: (1.5, 5.0);
log_period: (-3.0, 5.0);
log_factor: (-5.0, 5.0)

MCMC (george):
nwalkers: 8;
nburn: 50;
nsteps: 500

MCMC (celerite):
nwalkers: 32;
nburn: 500;
nsteps: 5000

Execution time:
Sigma clipping: 10m 18s;
MCMC sampling: 7h 50m 15s

Execution time:
Sigma clipping: 7.46s;
MCMC sampling: 1m 56.7s

DS

$$k(\tau) = e^{-a\tau} cos\left(\frac{2\pi\tau}{p}\right)$$

Parameters:
a $\longrightarrow$ log_a;
p $\longrightarrow$ log_p

Bounds:
log_a: (-5.0, -1.5);
log_p: (-3.0, 5.0);

MCMC (george):
nwalkers: 6;
nburn: 50;
nsteps: 500

MCMC (celerite):
nwalkers: 32;
nburn: 500;
nsteps: 5000

Execution time:
Sigma clipping: 5m 16s;
MCMC sampling: 10h 3m 32s

Execution time:
Sigma clipping: 6.20s;
MCMC sampling: 1m 29.5s