# Comparison chart

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KIC – ID from Kepler Input Catalog;
KID – Kernel Identifier;
KL – Kernel Link (*george*);
CNL – Notebook Link (*celerite*);
GNL – Notebook Link (*george*);
TP – Value of the period of a star [days]
from table 3 from Mathur et al. (2014);
IP – Inferred value of the period [days] obtained by
minimizing the negative marginalized likelihood;
LF – Value of the likelihood function

| KIC | KID | KL | CNL | GNL | TP | IP | LF |
|---|---|---|---|---|---|---|---|
| 1430163 | Base | — | link | — | $3.88 \pm 0.58$ | 3.8616782074415545 | 11569.731327537733 |
| | DS | — | link | — | | 3.862409454622822 | 11569.731268360863 |
| | DSS | link | — | link | | 4.025972513638813 | 9795.464897296839 |
| | BaseN | — | link | — | | 3.7612323279620403 | 11537.419932869527 |
| | DSN | — | link | — | | 3.8613967998546928 | 11569.730904214402 |
| | DSSN | link | — | link | | 4.096826429847693 | 11640.772932935852 |

# 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 $\longrightarrow$ factor;
c $\longrightarrow$ log_timescale;
P $\longrightarrow$ log_period;

Bounds:
log_amp: (-10.0, 0.0);
factor: (-1.0, 0.0)
log_timescale: (0.0, 2.5);
log_period: (-3.0, 5.0);

# DS

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

Parameters:
A $\longrightarrow$ log_amp;
a $\longrightarrow$ log_a;
P $\longrightarrow$ log_P;

Bounds:
log_amp: (-5.0, 0.0);
log_a: (-5.0, 0.0);
log_P: (-3.0, 5.0)

# DSS

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

Parameters:
A $\longrightarrow$ amp;
a $\longrightarrow$ a;
P $\longrightarrow$ P;

Bounds:
amp: (0.0025, 1.0);
a: (0.0, 50.0);
P: (2.5, 10.0)

# BaseN

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

Parameters:
a $\longrightarrow$ log_amp;
b $\longrightarrow$ factor;
c $\longrightarrow$ log_timescale;
P $\longrightarrow$ log_period;
F $\longrightarrow$ log_famp;
f $\longrightarrow$ log_ftimescale;

Bounds:
log_amp: (-10.0, 0.0);
factor: (-1.0, 0.0);
log_timescale: (0.0, 2.5);
log_period: (-3.0, 5.0);
log_famp: (-5.0, 12.0);
log_ftimescale: ; (2.0, 20.0)

# DSN

$$k(\tau) = Ae^{-a\tau}cos\left(\frac{2\pi\tau}{P}\right) + Fe^{-\tau/f}$$

Parameters:
A $\longrightarrow$ log_amp;
a $\longrightarrow$ log_a;
P $\longrightarrow$ log_p;
F $\longrightarrow$ log_F;
f $\longrightarrow$ log_f;

Bounds:
log_amp: (-5.0, 0.0);
log_a: (-5.0, 0.0);
log_p: (-3.0, 5.0)
log_F: (-20.0, 0.0)
log_f: (0.0, 10.0)

# DSSN

$$k(\tau) = Ae^{-a\tau^2} cos\left(\frac{2\pi\tau}{P}\right) + Be^{-b\tau}$$

Parameters:
A $\longrightarrow$ amp;
a $\longrightarrow$ a;
B $\longrightarrow$ bmp;
b $\longrightarrow$ b;
P $\longrightarrow$ p;

Bounds:
amp: (0.0025, 1.0);
a: (0.0, 5.0);
bmp: (0.0, 1.0)
b: (0.0, 50.0)
p: (2.5, 5.0)