Assignment - Week 2

1. Let the inclination be i, the stellar radius be R(S), R(P) be radius of the planet,a be the semi-major axis.

For simplification let us assume b = 0

For precise calculations:

But from the shape of the transit (symmetric and deep), this is very likely hight inclination, so central transit is approximately

So the inclination is most likely to be

1. Period of the planet:

We can see 5 dips over 28-day span. So the orbital period must be days.

1. Planet Radius:

Let R is the radius of the sun, d be the transit depth and other parameters remain the same. It is given by

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From the zoom-in transit plot:

Therefore,

d = 0.05.

Since it is given R(S) = 0.2R

So the radius of the planet is 0.01R.

1. Semi-amplitude K

The peak RV is about +2.2m/s. The minimum RV is about -2.2 m/s. So the full amplitude is 4.4m/s. Therefore, the semi amplitude is