Name

Welcome!

You are now among the few people on Earth to be looking for an alien world!

There are billions of planets out there, waiting to be discovered. As planet-hunters discover more and more planets - especially worlds that more closely resemble Earth - the big question is, "What are these worlds like?"

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Your Cosmic Address

You'll be looking out into space vast distances to look for another planet. As a starting point, it's important to think about where you are right now, right here on your home planet.

If there are any creatures on the worlds you'll be exploring, they won't be writing to you anytime soon. But if they did....

Here's a quick reminder for your galactic post office:

Your Name:	CH_KG1DN06
Your Street:	1550 Owens Store Road
Your City:	Canton
Your State:	GA
Your Country:	
Your Planet:	Earth
Your Star:	Sol (our Sun)
Your Galaxy:	Milky Way

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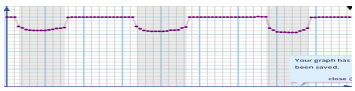
Modeling Lab

Challenge 1: What does the 'Signal' look like?



When the planet starts to go between the star and the observer, only part of the light is blocked which is why the dip is an eventual curve. Then the planet is blocking the most light

that it can block, so the line becomes straighter when it is in the middle. When the planet is going off the star, the same thing happens as in the first explanation, so the grap curves back.

Challenge 2: How much light is blocked?

.04 What fraction of the star's light does the planet block?

4 By what percent will the star dim?

What determines how much your star will dim?

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- A. Only the planet's size.
- B. Only the planet's speed.
- C. Both the planet's size and speed

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Modeling Lab

Challenge 2 Continued

Your Explanation

I used the area comparisons and then determined that the star would dim by the ratio of the areas between them because that area where light would be is being blocked.

Challenge 3: What scale will you use?

20 Scale you used for your graph

Your Explanation

The re scaling of the Y axis is not changing the data, it is just changing the way you can read it more clearly.

Challenge 4: Is predicted brightness graph the same at this distance?

Yes, the change in brightness is the same although we are farther away because the light is still being blocked.

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Image Lab

HATP36-140327101643;10.2667;0.7001;HATP-36;140327;101643;4264;3549;7204;1672;1661;11()HATP36-140327102319;10.3833;0.7285;HATP-36;140327;102319;4266;3225;7240;1678;1667;11()HATP36-140327064110;6.68333;0.758;HATP-36;140327;064110;3060;2740;3885;2239;2299;11()HATP36-140327104943;10.8167;0.7261;HATP-36;140327;104943;4348;3349;7304;1753;1754;11()HATP36-140327093030;9.5;0.7263;HATP-36;140327;093030;4236;3236;7196;1638;1633;11()HATP36-140327092354;9.38333;0.7191;HATP-36;140327;092354;4221;3208;7277;1607;1604;11()HATP36-140327091718;9.28333;0.7138;HATP-36;140327;091718;4192;3196;7267;1606;1593;11()HATP36-140327082427;8.4;0.423;HATP-36;140327;082427;3224;3074;4536;2780;2816;11()HATP36-140327095018;9.83333;0.7181;HATP-36;140327;095018;4220;3208;7302;1576;1591;11()HATP36-140327094342;9.71667;0.7416;HATP-36;140327;094342;4270;3220;7192;1581;1586;11()HATP36-140327091042;9.16667;0.758;HATP-36;140327;091042;3060;2740;3885;2239;2299;11()HATP36-140327085052;8.83333;0.7105;HATP-36;140327;085052;3543;3014;5232;2123;2116;11()HATP36-140327084416;8.73333;0.7163;HATP-36;140327;084416;3371;2997;4558;2357;2332;11()HATP36-140327080437;8.06667;0.7203;HATP-36;140327;080437;3261;2904;4345;2314;2336;11()HATP36-140327073811;7.63333;0.5699;HATP-36;140327;073811;3939;3067;8153;1735;1715;11()HATP36-140327073134;7.51667;0.7494;HATP-36;140327;073134;4244;3140;7119;1597;1594;11()HATP36-140327071820;7.3;0.718;HATP-36;140327;071820;3934;3126;6417;1811;1792;11()HATP36-140327065830;6.96667;0.7235;HATP-36;140327;065830;3931;3129;6324;1854;1845;11()HATP36-140327093706;9.61667;0.4401;HATP-36;140327;093706;3198;3199;7259;1604;1599;11 HATP36-140327 Select a Star

HATP36-140327

(HATP36-140327101643)	Total brightness inside your circle
Target star (T)	4264
Comparison Star 1 (C1)	3549
Comparison Star 2 (C2)	7204

Background 1 (B1)	1672
Background 2 (B2)	1661

Your Results

Relative Brightness (RB) = (T - ((B1 + B2)/2)) / (((C1 + C2)/2) - ((B1 + B2) /2))

RB=(4264-((1672+1661)/2))/(((3549+7204)/2)-((1672+1661)/2))

RB	0.7001
Time	10.2667

Image Name	Time	Brightness
HATP36-140327101643	10.2667	0.7001
HATP36-140327102319	10.3833	0.7285
HATP36-140327064110	6.68333	0.758
HATP36-140327104943	10.8167	0.7261
HATP36-140327093030	9.5	0.7263
HATP36-140327092354	9.38333	0.7191
HATP36-140327091718	9.28333	0.7138
HATP36-140327082427	8.4	0.423
HATP36-140327095018	9.83333	0.7181
HATP36-140327094342	9.71667	0.7416
HATP36-140327091042	9.16667	0.758
HATP36-140327085052	8.83333	0.7105
HATP36-140327084416	8.73333	0.7163
HATP36-140327080437	8.06667	0.7203
HATP36-140327073811	7.63333	0.5699
HATP36-140327073134	7.51667	0.7494
HATP36-140327071820	7.3	0.718
HATP36-140327065830	6.96667	0.7235
HATP36-140327093706	9.61667	0.4401

Brightness Graph

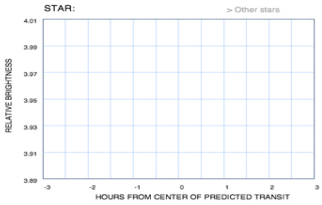

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Image Lab

Data Detectives

Challenge 1: Observations vs. Predictions

Challenge 2: Where are the problems?

Challenge 3: Tutorial

Challenge 4: Factors affecting the class's graph

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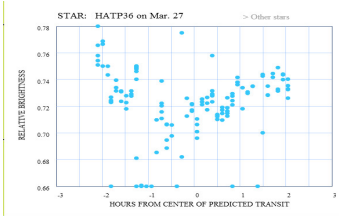
Data Lab

Select a Star

HATP36-140327

Detection



Challenge 1a: Have I found an exoplant?

Challenge 1: ﷺDo you think you have found an exoplanet? ﷺWhy or why not?Yes, I think we have found an exoplanet. There is a noticeable dip in the brightness graph which could be a planet orbiting it.

Challenge 1b: Additional evidence

Challenge 1b: Explain how the additional evidence affects your conclusion about detecting a transiting planet.Using my classes data, I think we have found a planet since the data together shows the curve.

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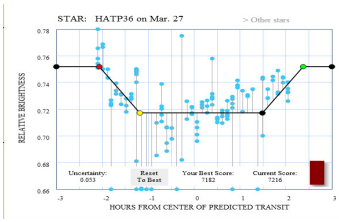
Data Lab

Challenge 2: Estimate the curve

0.76	Baseline Brightness	-1.89	Beginning of Transit
0.69	Dip Brightness	1.42	End of Transit

Challenge 2: Why do you think your data don´t exactly match the pattern predicted by your model?Error in the telescope along with cloudy times at night could hurt the data.

Challenge 3: Using the model



0.752	Baseline Brightness
0.719	Dip Brightness
-2.06	Beginning of Transit
2.37	End of Transit

Challenge 3: Describe why there is uncertainty in your results for the baseline and dip level.Since we are using multiple peoples data and since some times there were clouds in the way, there is uncertanty.

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Data Lab II

Select a Star

HATP36-140327

Size

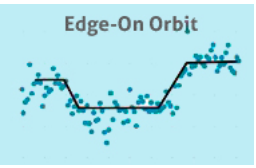
Challenge 4a: Calculate the planet's size

My planet is 0.214 times the width of my star.

Orbit

Challenge 5: Is the planet's orbit tilted?

My data is most consistent with a Tilted orbit.



Challenge 6: How close is the planet to its star?

My planet is 5 million miles from its star.

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Data Lab II

Press Conference

Method

The method I used to detect this planet was: We used the telescope to observe the change in brightness to see if there was a planet.

Evidence for detection

The evidence for a positive detection included:If there was no dip in brightness, there would not be a planet orbiting it.

Evidence for size and orbit

Here´s how my evidence reveals the size and orbit of my planet: The dip in brightness during its transit time can tell us the size.

Prospects for life

I think the planet´s physical conditions affect the prospects for life this way: It seems unlikely that there could be life on the planet because of its immense size and it is very close to the sun

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