



Stellar Occultation: Student Handout

Part 1: Pre Lab

To be completed independently

Later, you will be observing the dwarf planet, Snorkzat, which will pass in front of a distant star this evening. Since you are an astronomer, your plan is to observe this through a 1-meter diameter telescope in New Mexico and take a picture every second. Before you make your observations, hypothesize about what you will see as the star appears to pass behind the dwarf planet:

The planet: 

The star: 

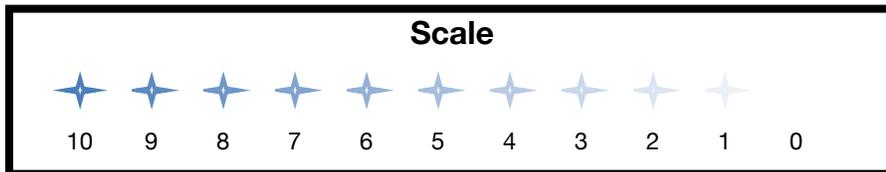
Hypothesis Table:

| | | | | | |
|--|---|---|---|---|---|
| Dwarf Planet and Star position |  |  |  |  |  |
| Time (seconds) | 0 | 3 | 6 | 9 | 12 |
| Hypothesis: If Snorkzat has no atmosphere, I will see... | | | | | |
| Hypothesis: If Snorkzat has an atmosphere, I will see... | | | | | |



Star Light, Star Bright? Finding Remote Atmospheres

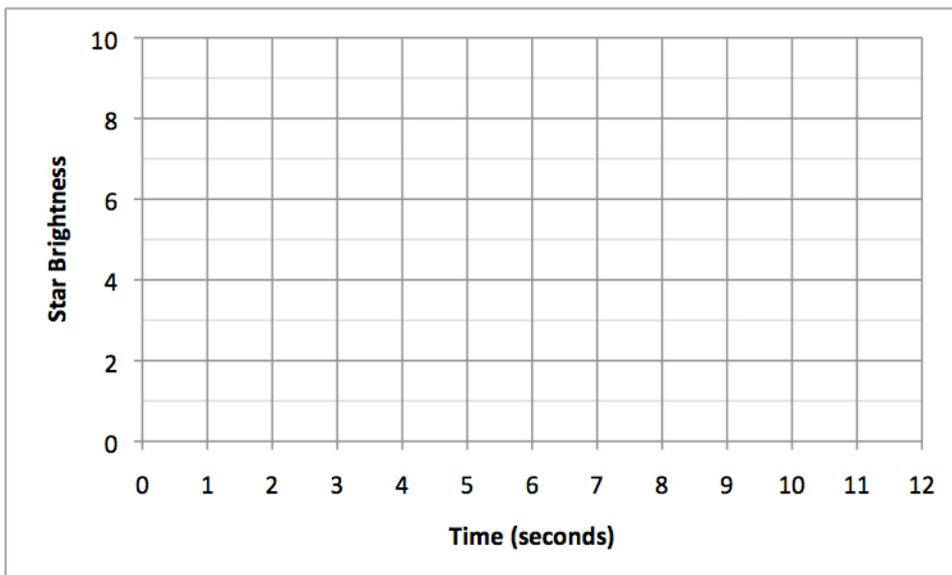
Your telescope measures the brightness of the objects you are viewing. The star you will be observing tonight has a brightness of 10. In the next section, complete the tables below and graph your hypothesis of the brightness of the star versus time. Do not connect the dots.



Hypothesis: If Snorkzat has no atmosphere...

| Time (seconds) | Star Brightness (10= bright, 0=dim) |
|----------------|-------------------------------------|
| 0 | |
| 3 | |
| 6 | |
| 9 | |
| 12 | |

Graph: If Snorkzat has no atmosphere...



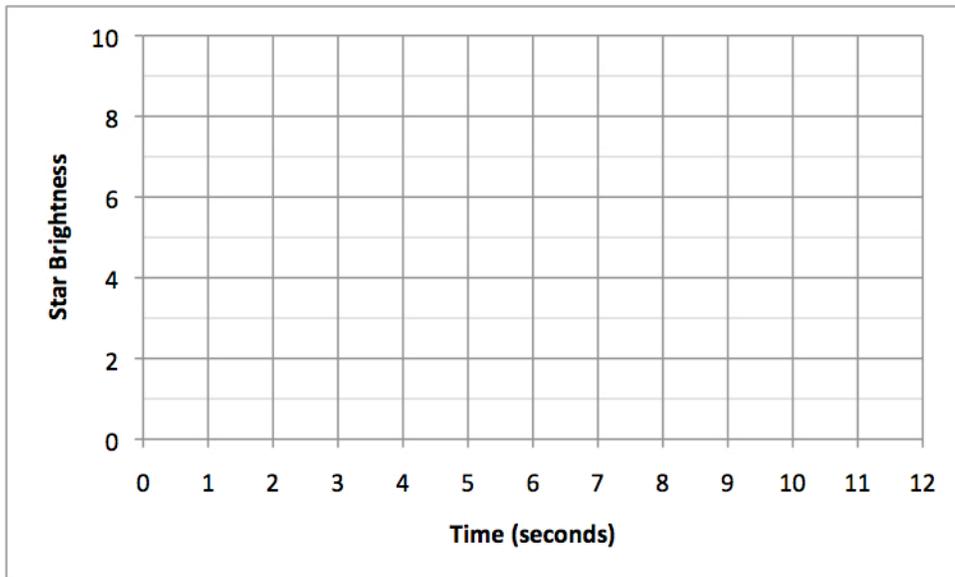


Star Light, Star Bright? Finding Remote Atmospheres

Hypothesis: If Snorkzat has an atmosphere...

| Time (seconds) | Star Brightness (10= bright, 0=dim) |
|---------------------------|--|
| 0 | |
| 3 | |
| 6 | |
| 9 | |
| 12 | |

Graph: If Snorkzat has an atmosphere...





Part 2: Exploring occultation events

Following instructions from your teacher, you will explore different occultation events. Compare these events below and note the time for your observation in the description. The first one is done for you.

| Object type | Description of event |
|-------------------------|---|
| No Atmosphere | At 2 seconds, the star was bright. A little after 2 seconds, the star disappeared behind the object. A little after 10 seconds, the star reappeared, and was just as bright as it was at zero seconds. |
| Thin Atmosphere | |
| Thick Atmosphere | |



Part 3: Viewing Snorkzat

Following instruction from your teacher, you will be viewing the Snorkzat occultation event.

Describe the event as you did in Part 2:

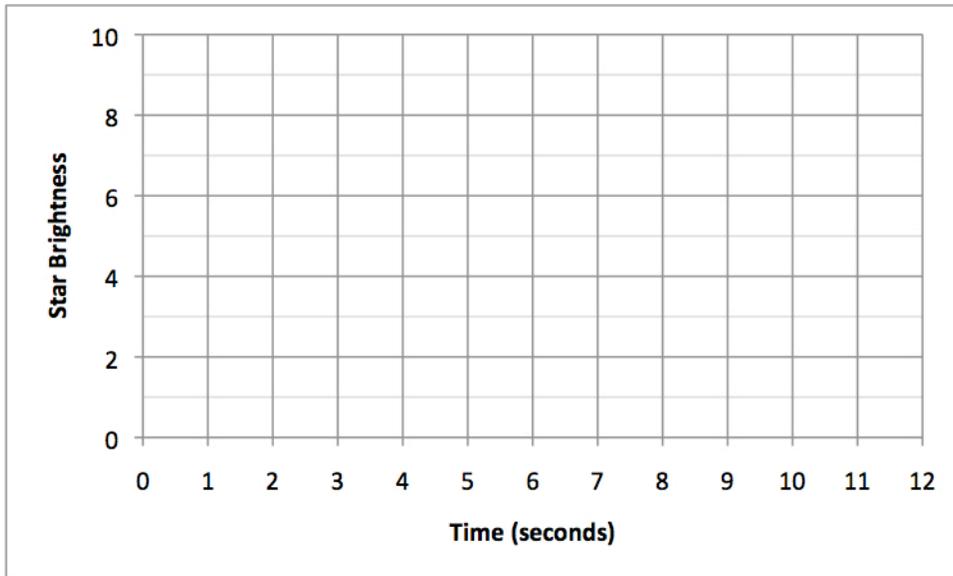
Record the stellar brightness in the table below, and then plot your results on the next page.

| At time (in seconds) | Earth Observer sees a stellar brightness of.... |
|----------------------|---|
| 0 | |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |



Star Light, Star Bright? Finding Remote Atmospheres

Graph the brightness of the star recorded during your observations. Do not connect the dots!



For each of the questions, below, explain your answer. Use an additional page if needed.

1. Does Snorkzat have an atmosphere?

2. Would you describe Snorkzat as a planet, dwarf planet, asteroid, or comet? Why?