The daily motion of the sky

Astronomy 101
Syracuse University, Fall 2018
Walter Freeman

September 4, 2018

Some announcements

- While I was out of touch over the weekend, I've gotten a lot of mail.
- I'll have all that answered by the end of the day today.
- Labs start this week!

Opportunities for help

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- By email: most of you have cellphone cameras...

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So I am eager to discuss them with you in the help sessions, and your TA's can help you as well.

If you're not sure about the reasoning involved, *ask us in class.* We won't tell you the answers but we'll make sure you know how to get there on your own! (That's the point...)

This week we will...

Today: consequences of the Earth's **rotation**:

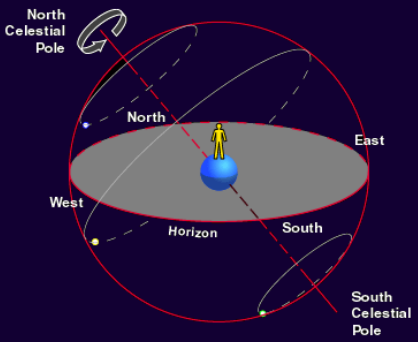
- Review the celestial-sphere model from last time
- Look in more detail at its consequences
- Complete the first *Lecture Tutorial* that we started last time

Thursday: consequences of the Earth's **revolution**:

- What about the Sun?
- What causes the seasons?
- What does the Sun do to the Earth?

Which are true in Syracuse?

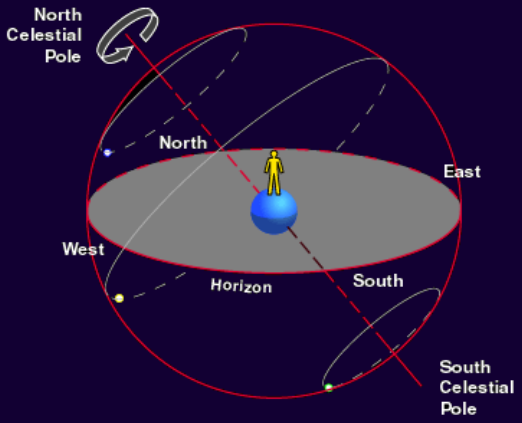
- I: Some stars are always visible (at night)
- II: Some stars are only visible sometimes; they rise and set during the night
- III: Some stars are never visible



A: I only
B: II only
C: III only
D: I and II
E: I, II, and III

Summary

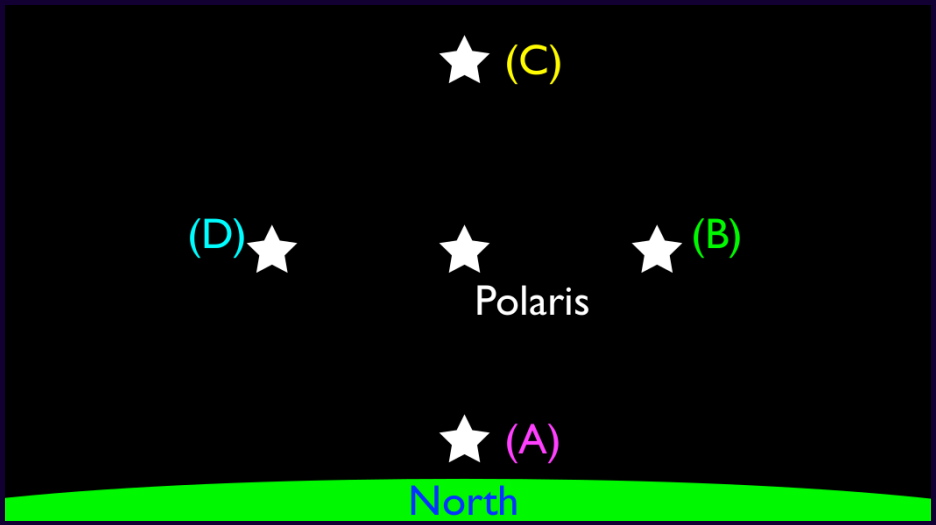
- We can treat the stars as all rotating together, on an invisible sphere far away
- The axis of rotation is the same as the Earth's, and it rotates once per day
- Only half of the sphere is visible, because the Earth is in the way



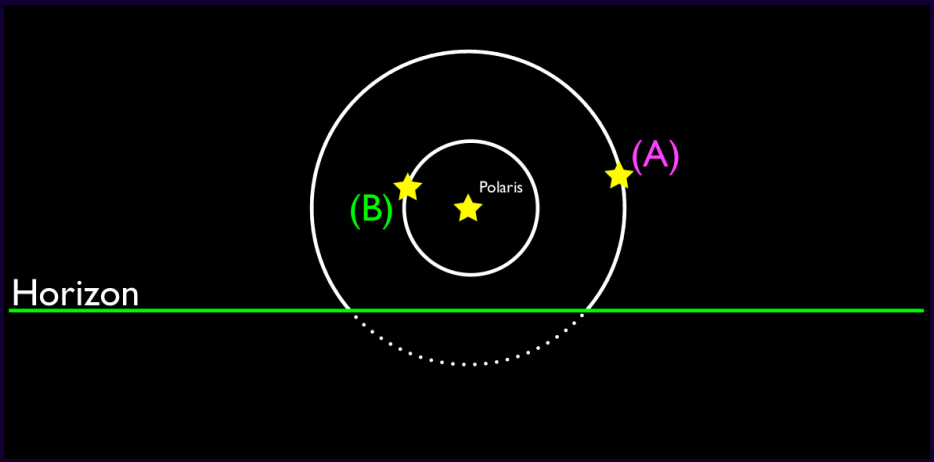
This picture was taken in Australia. Which way is the photographer looking?

A: North
B: South
C: East
D: West

In Syracuse, you see this star at (A). Where will it be six hours later?



Which star is visible longer?



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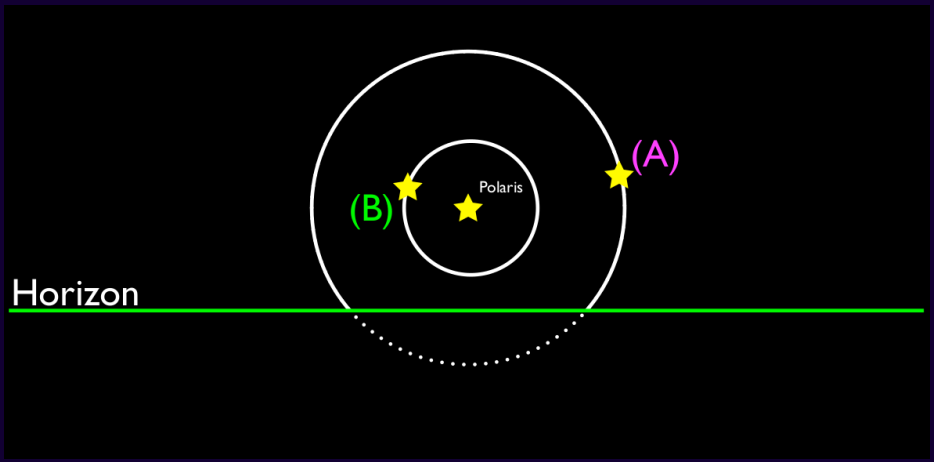
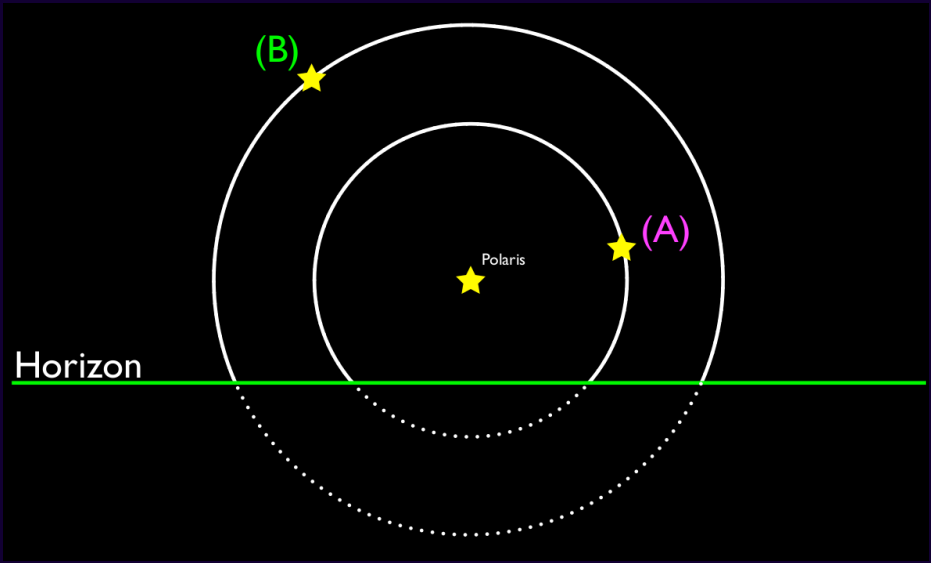


We call a star that is always above the horizon circumpolar.

Where in the sky should I look to find circumpolar stars?

A: High in the southern sky
B: Low in the eastern sky
C: High in the northern sky
D: Low-ish in the northern sky
E: Low in the northern sky

What about now? Which star is visible longer?



Complete pages 1-6.

We will talk about something else after this.

What about the Sun?

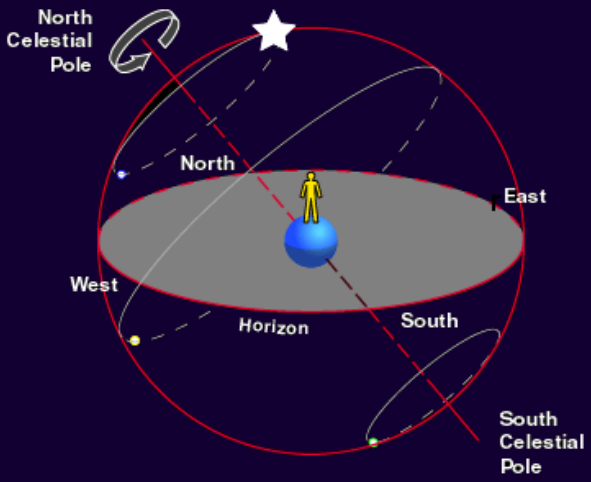
Over the course of one day, the Sun doesn't move very much.

This means the celestial sphere model can show us how the Sun moves each day.

It rises in the East and sets in the West, just like all the other stars.

How long is this star visible in the sky each day?

A: All the time
B: More than 12 hours
C: Less than 12 hours
D: It's never visible



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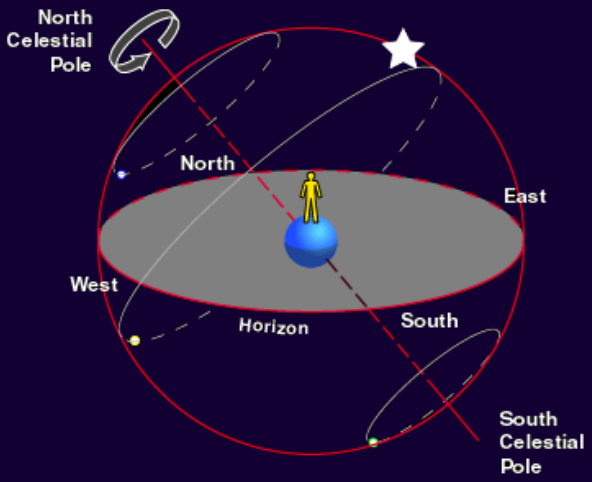

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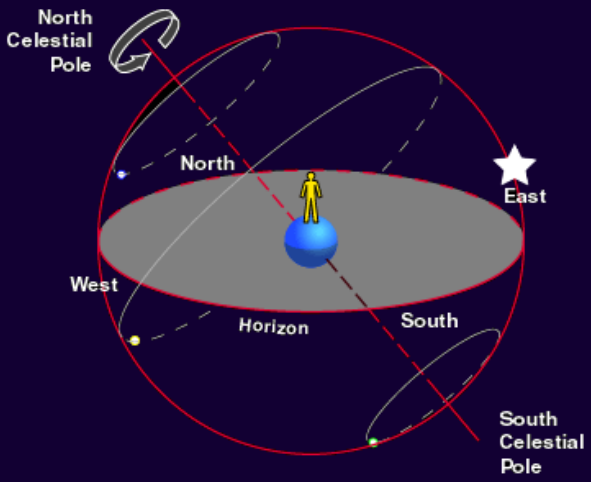

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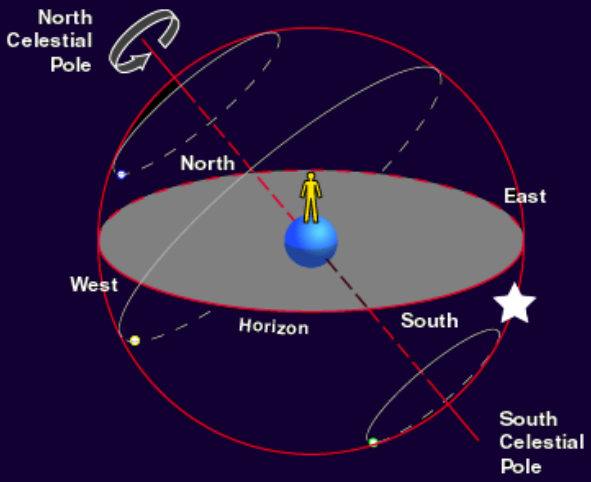

What does one star matter?

The visibility of one star in our sky isn't that big of a deal...

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The visibility of one star in our sky isn't that big of a deal...

... unless that star is the Sun! We'll talk about this Thursday.