

NOW:

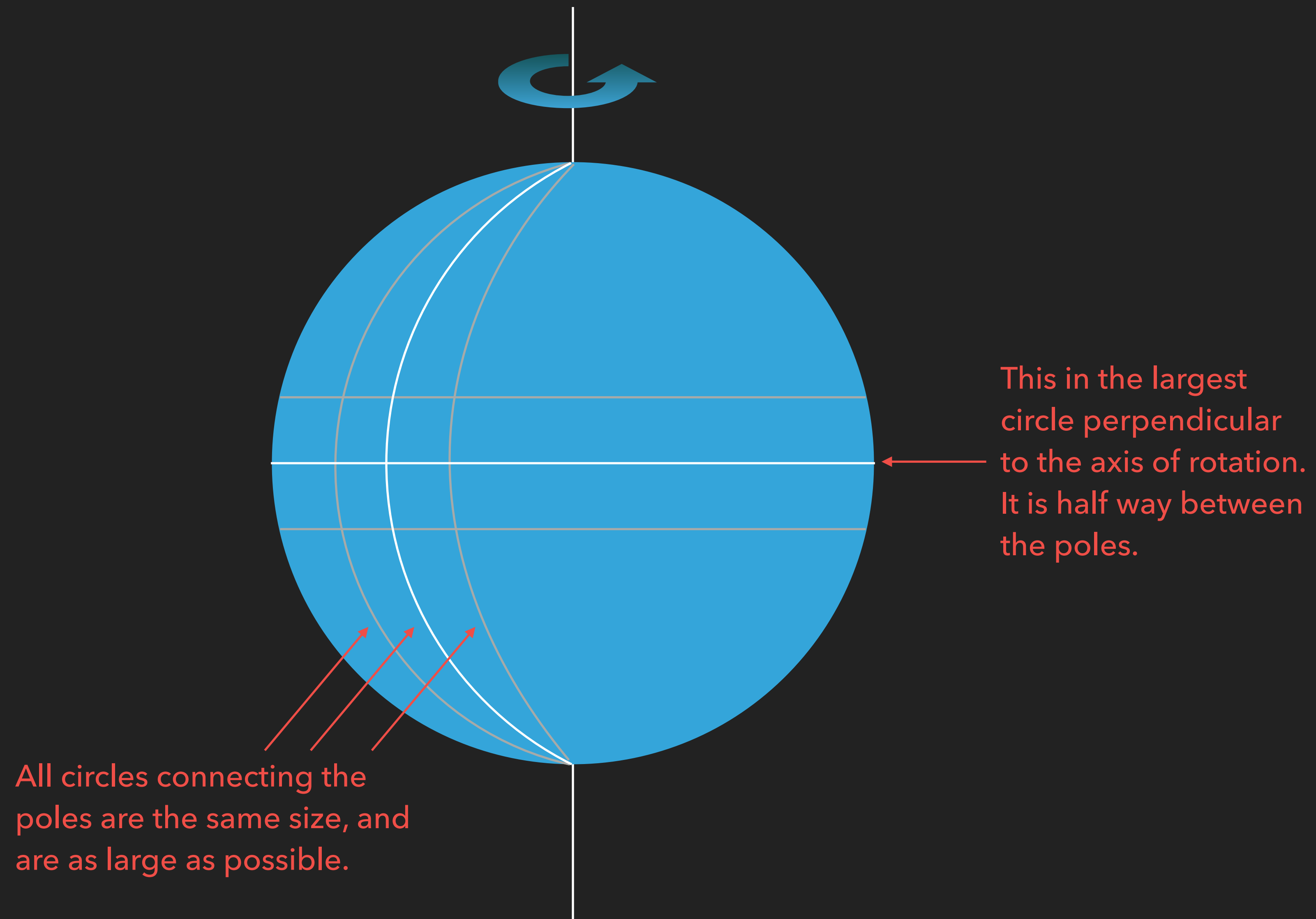
TIME

SPACE

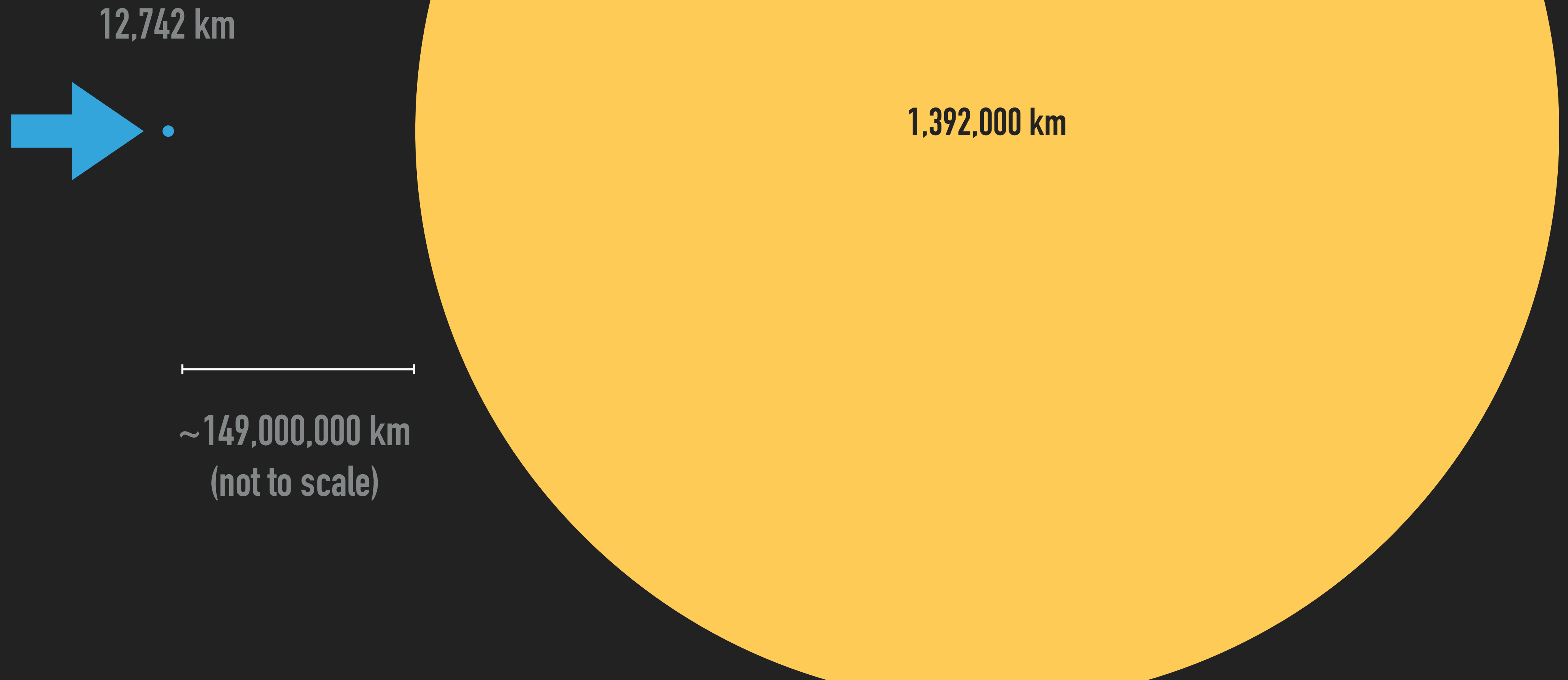
A SPHERE IN SPACE



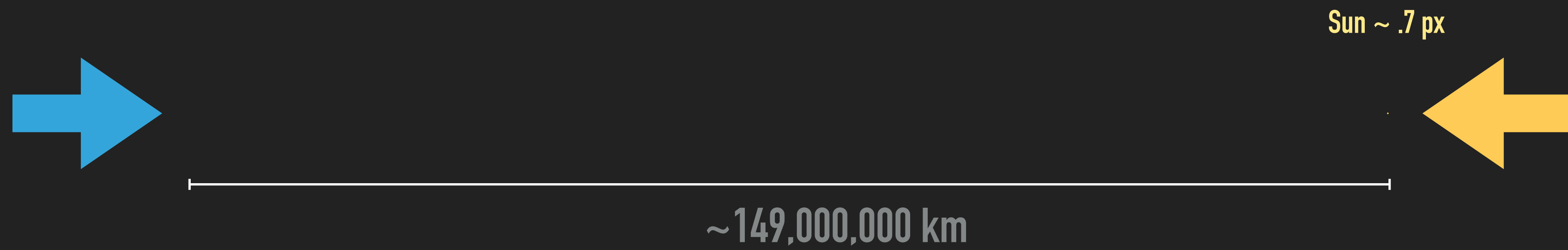
A SPHERE IN SPACE, SPINNING

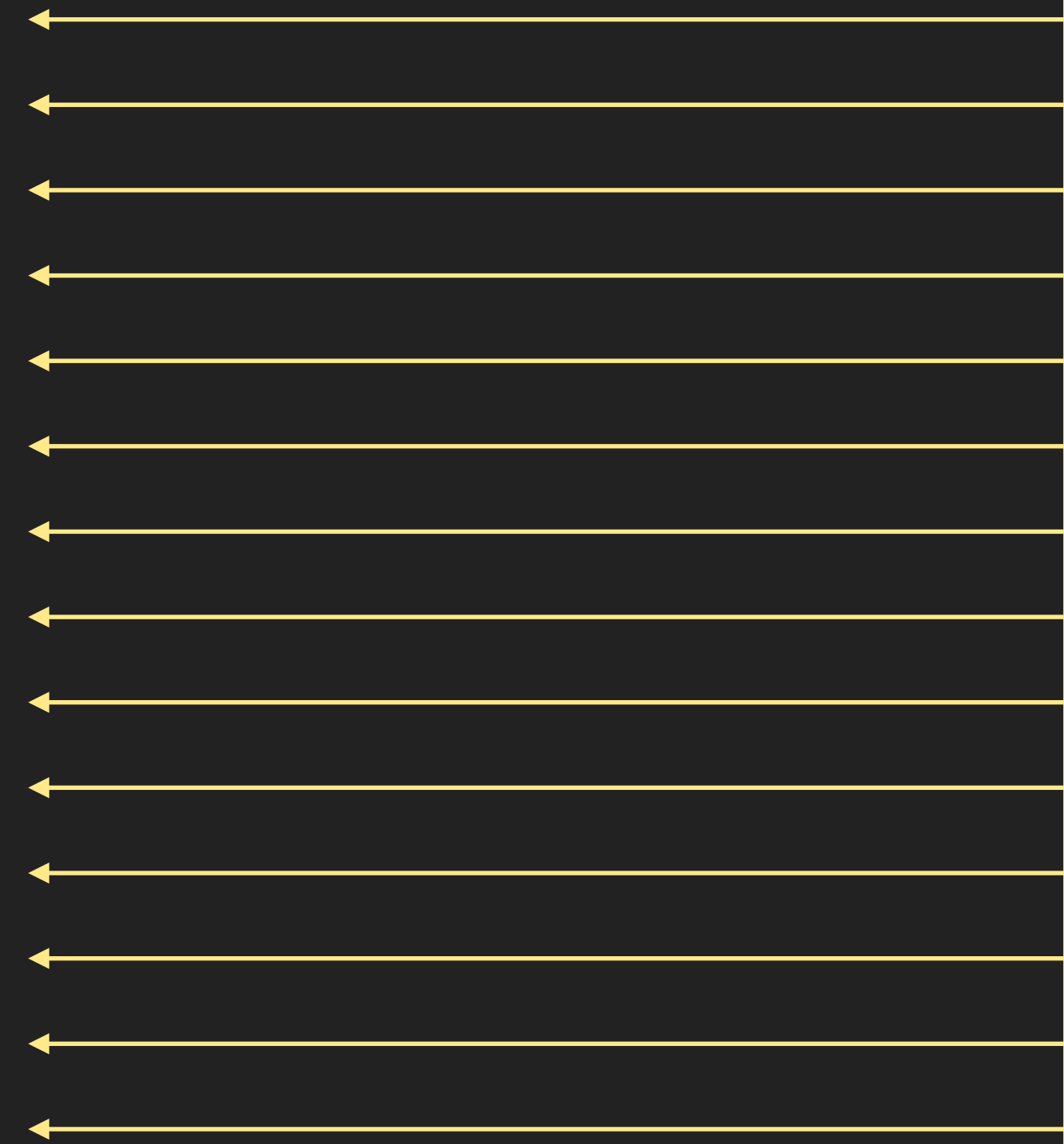
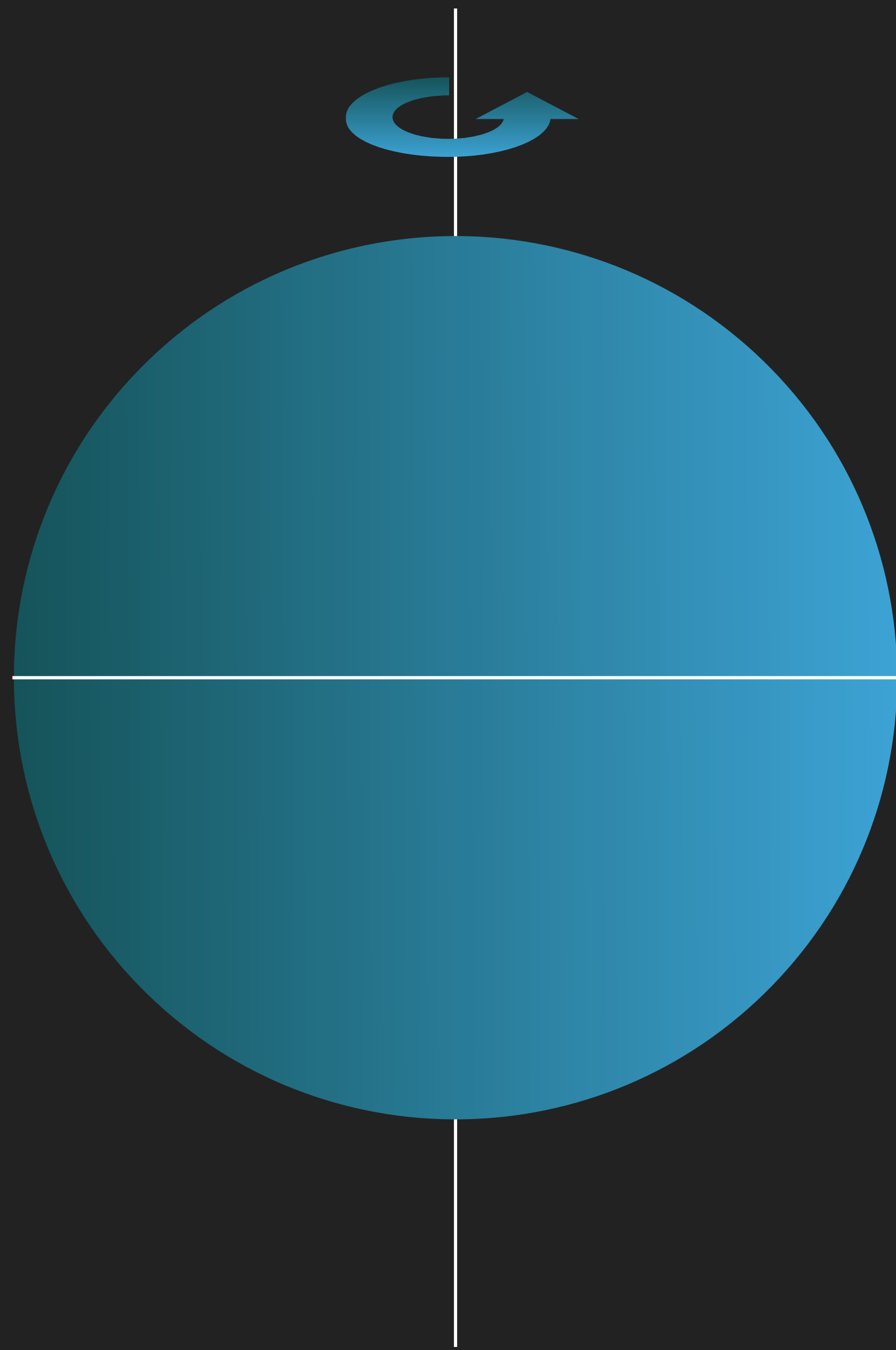


RELATIVE SIZE, SUN 109X EARTH'S DIAMETER

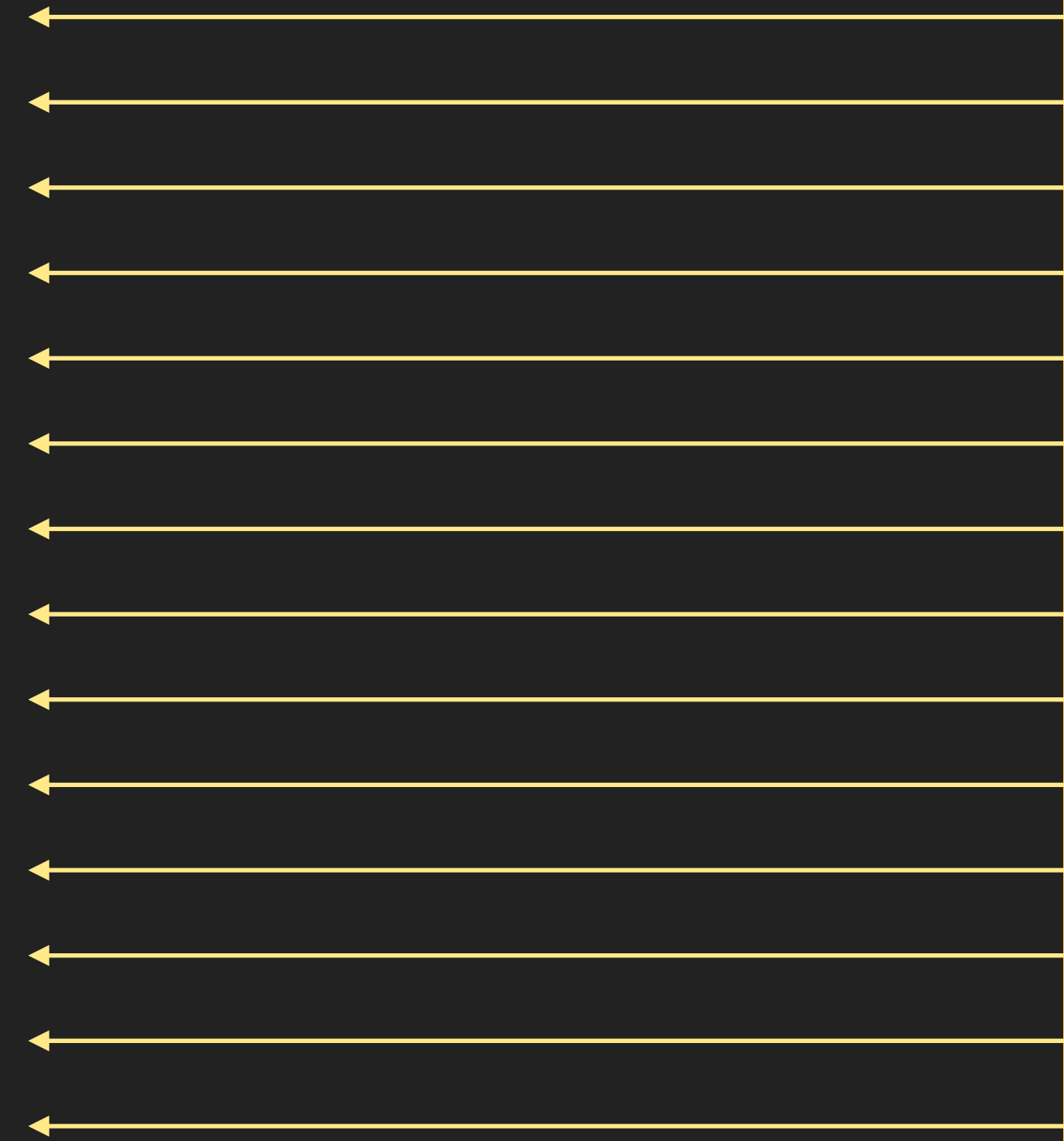
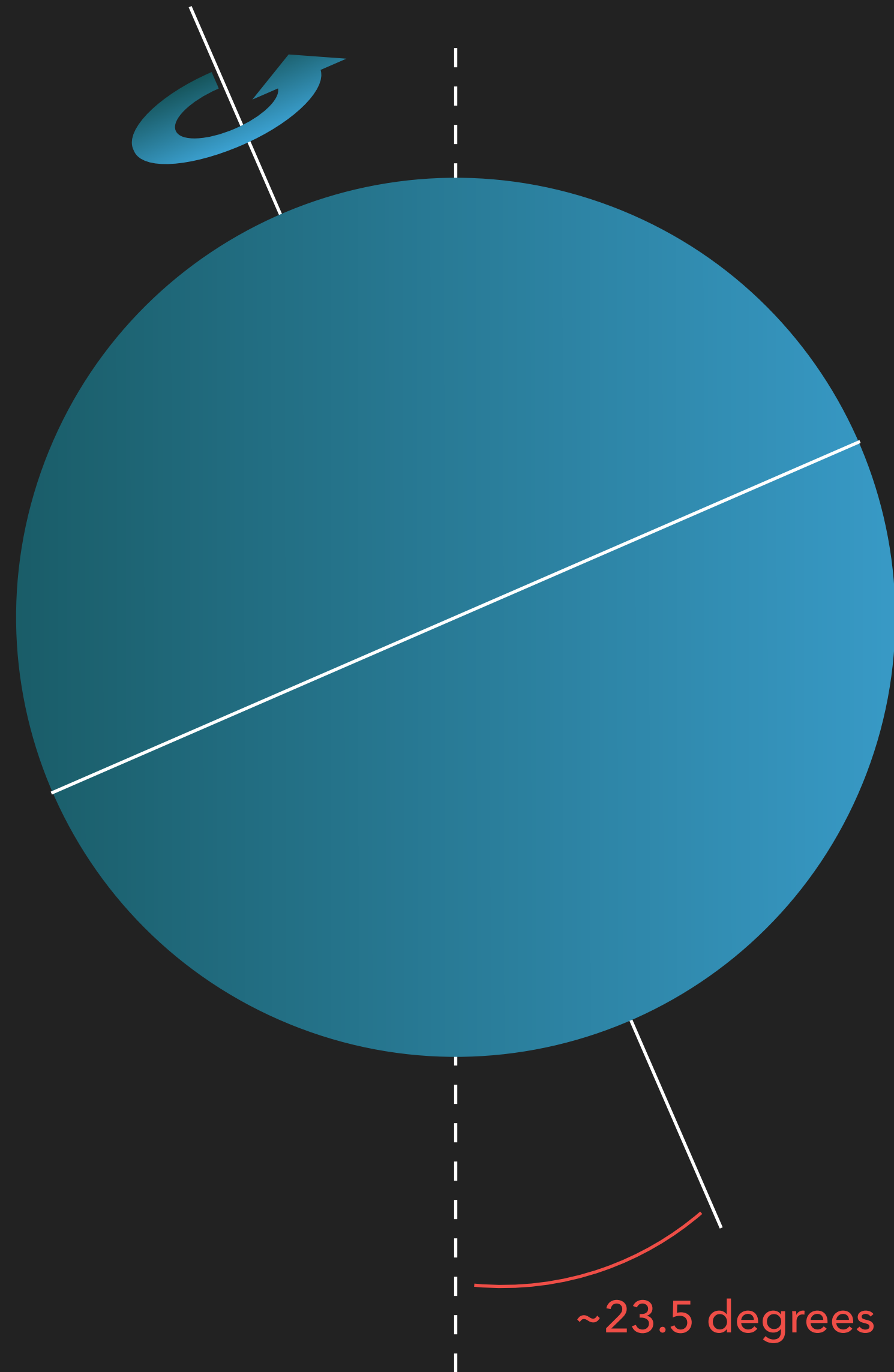


RELATIVE DISTANCE, EARTH NOT VISIBLE



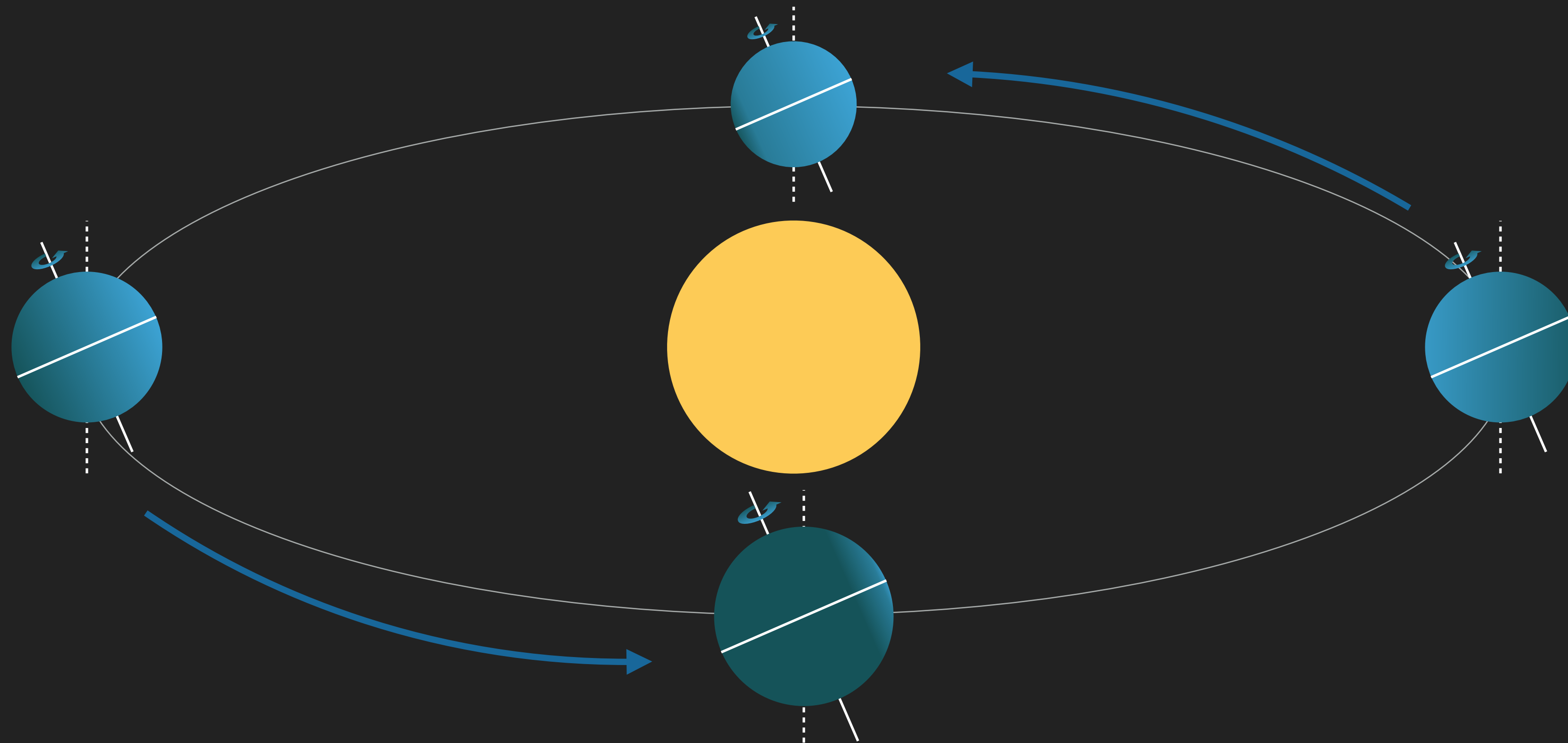


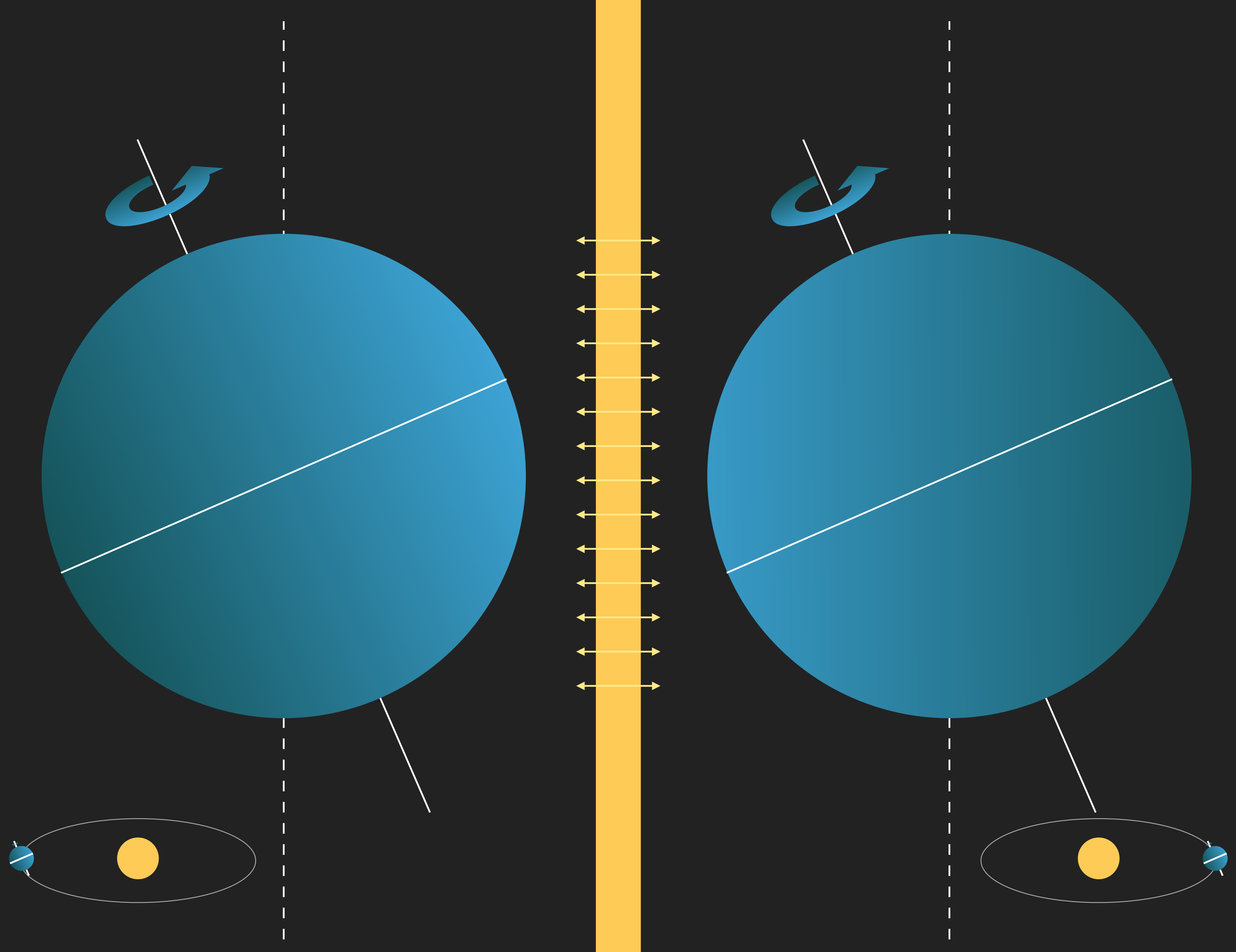
A SPHERE IN SPACE, SPINNING, TILTED

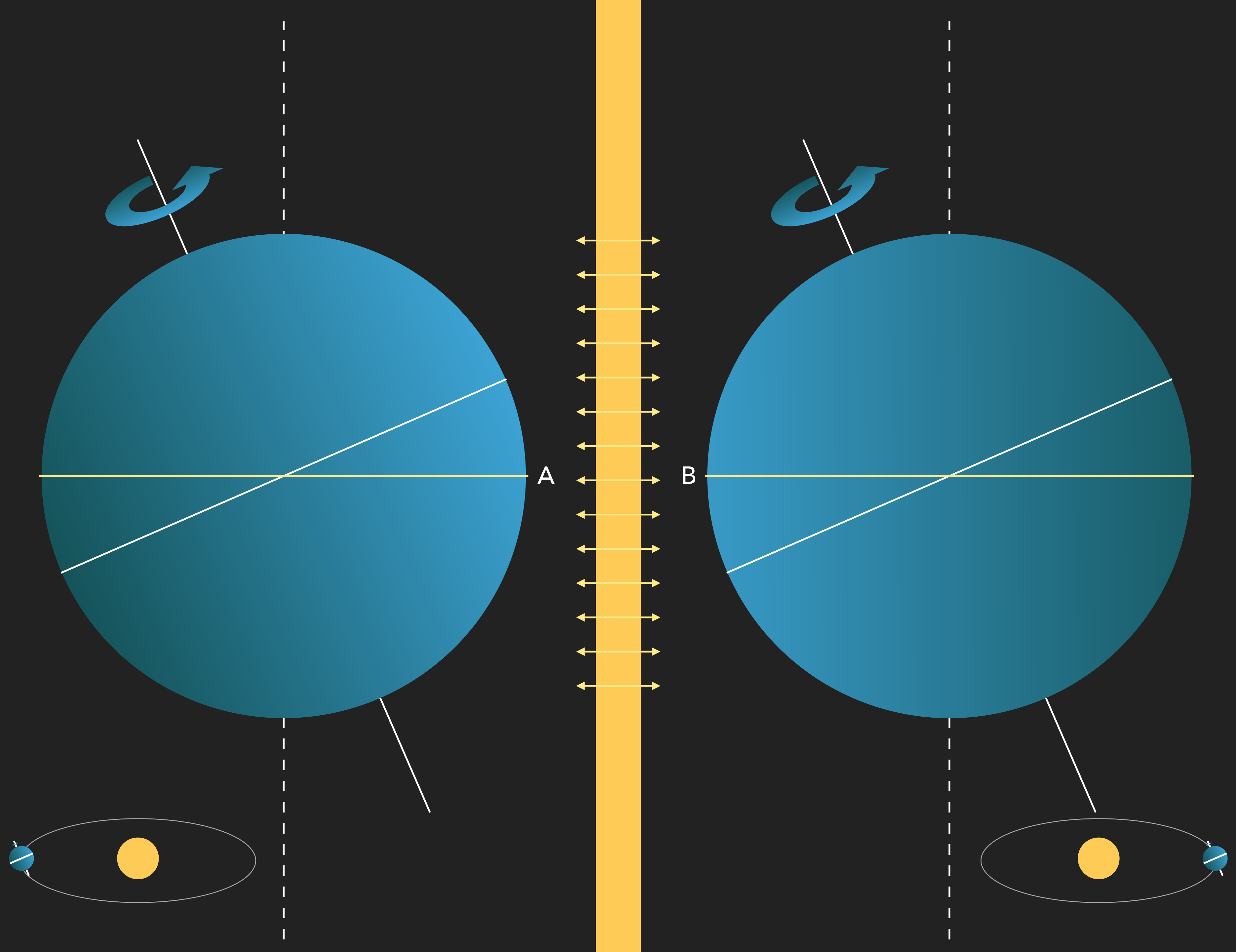


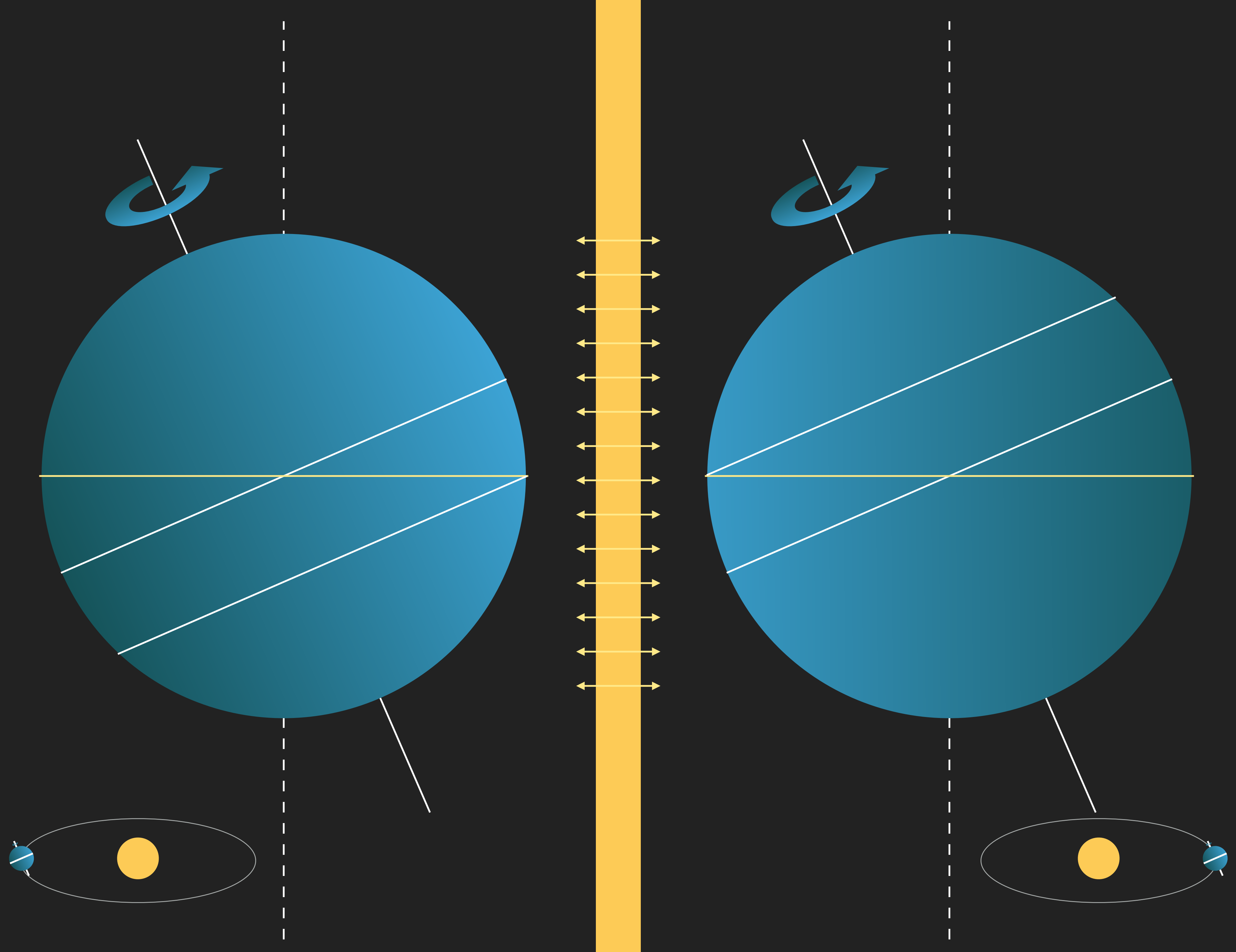
A SPHERE SPINNING, TILTED, AND ORBITING

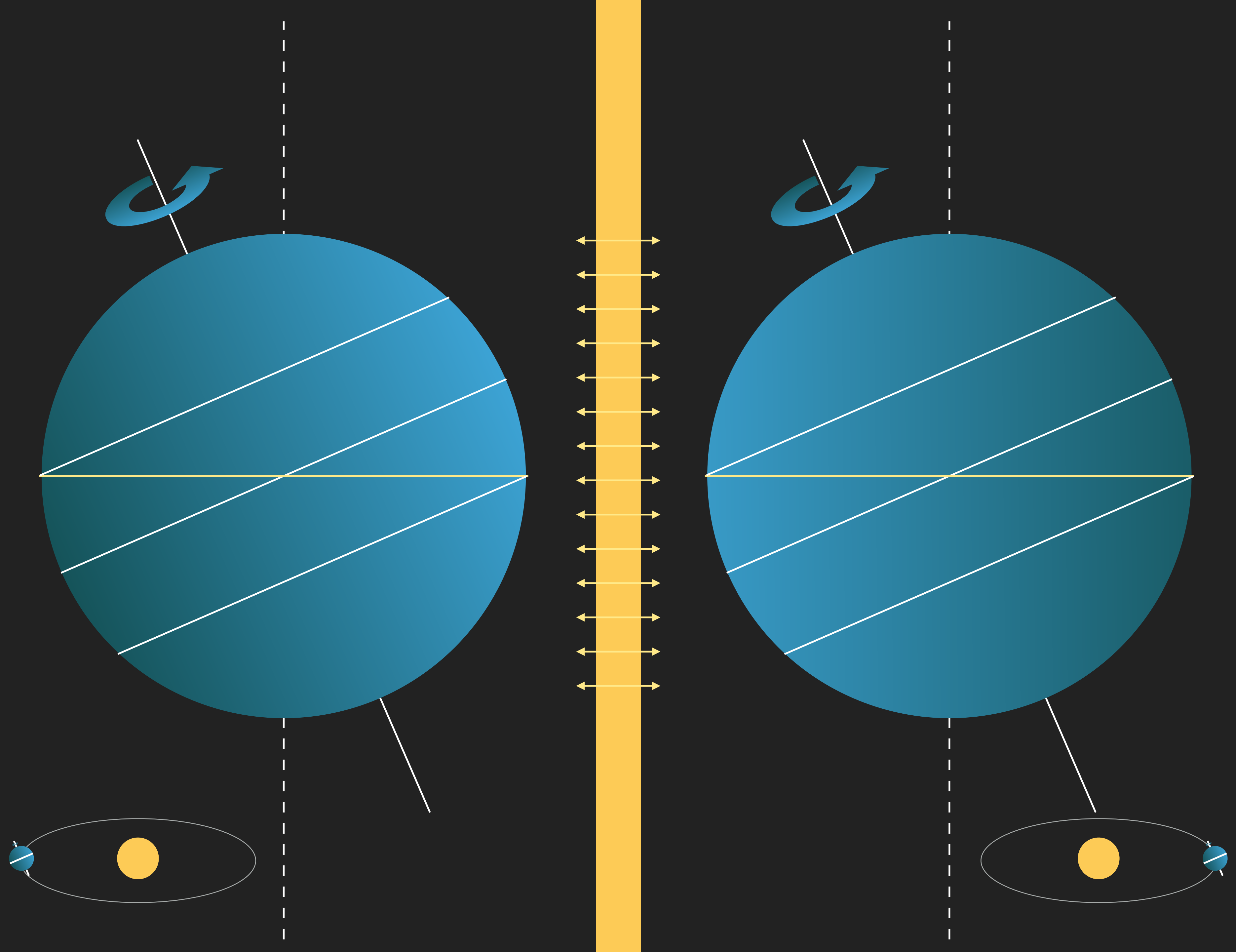
WITH CONSTANT TILT

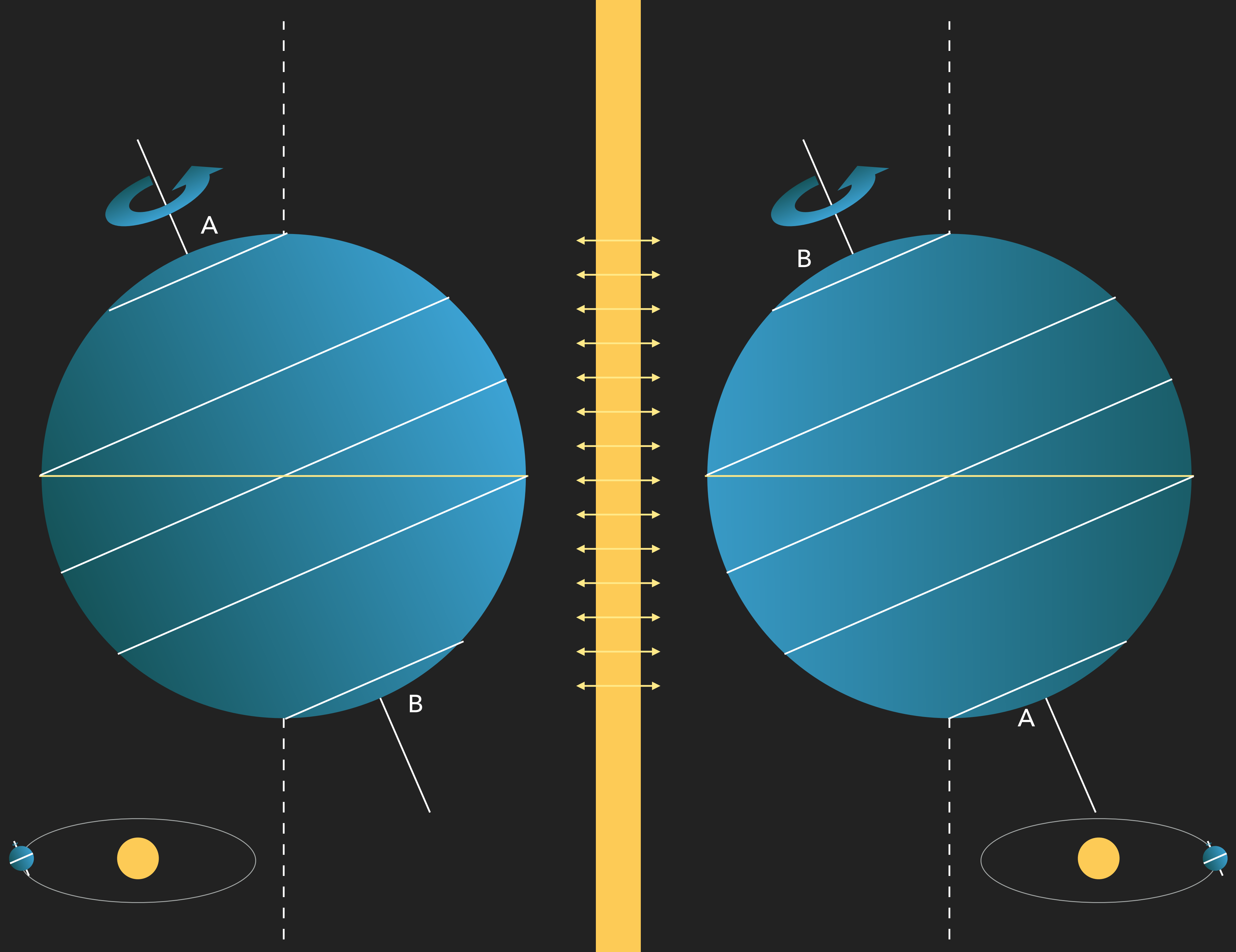


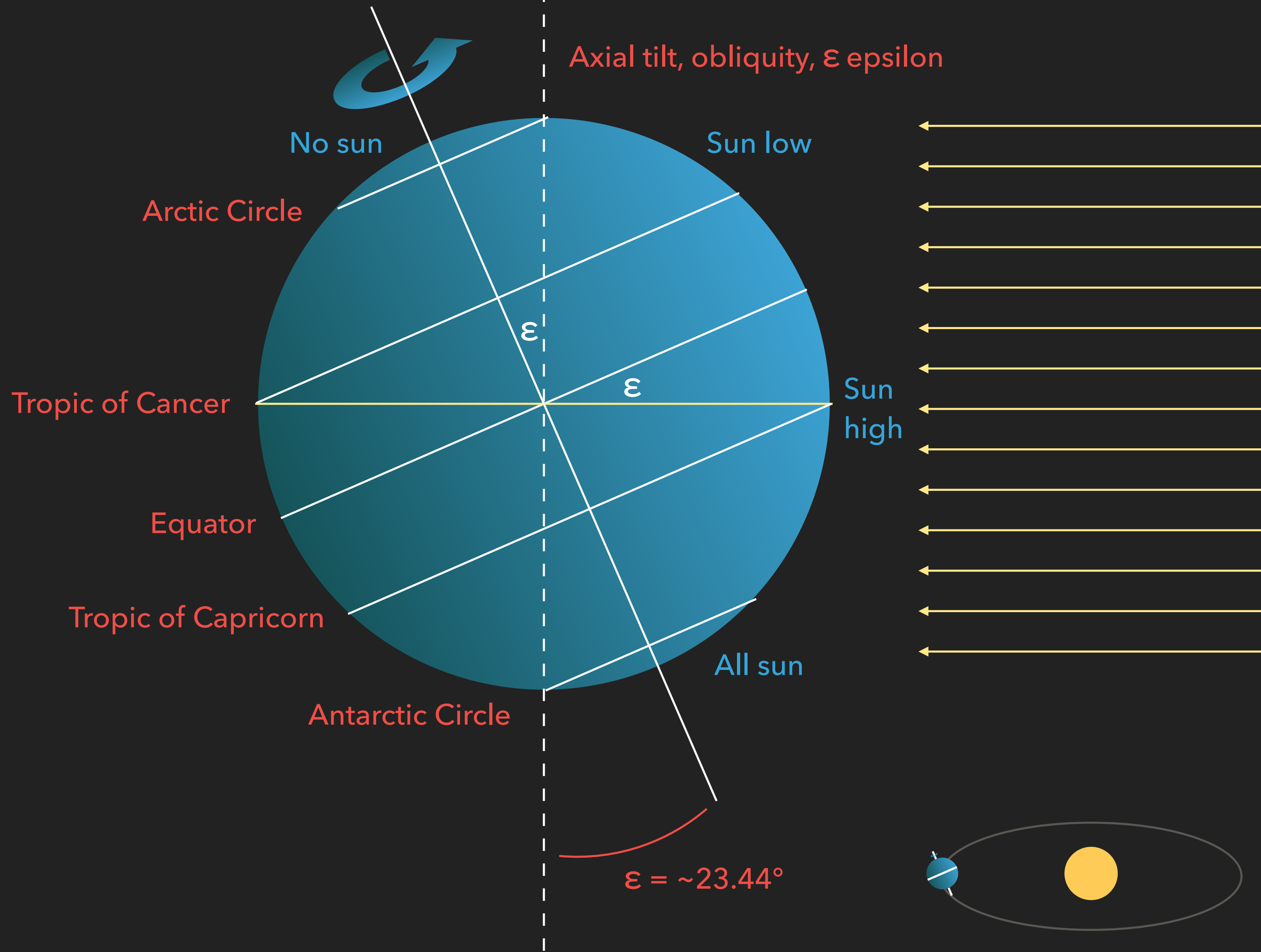


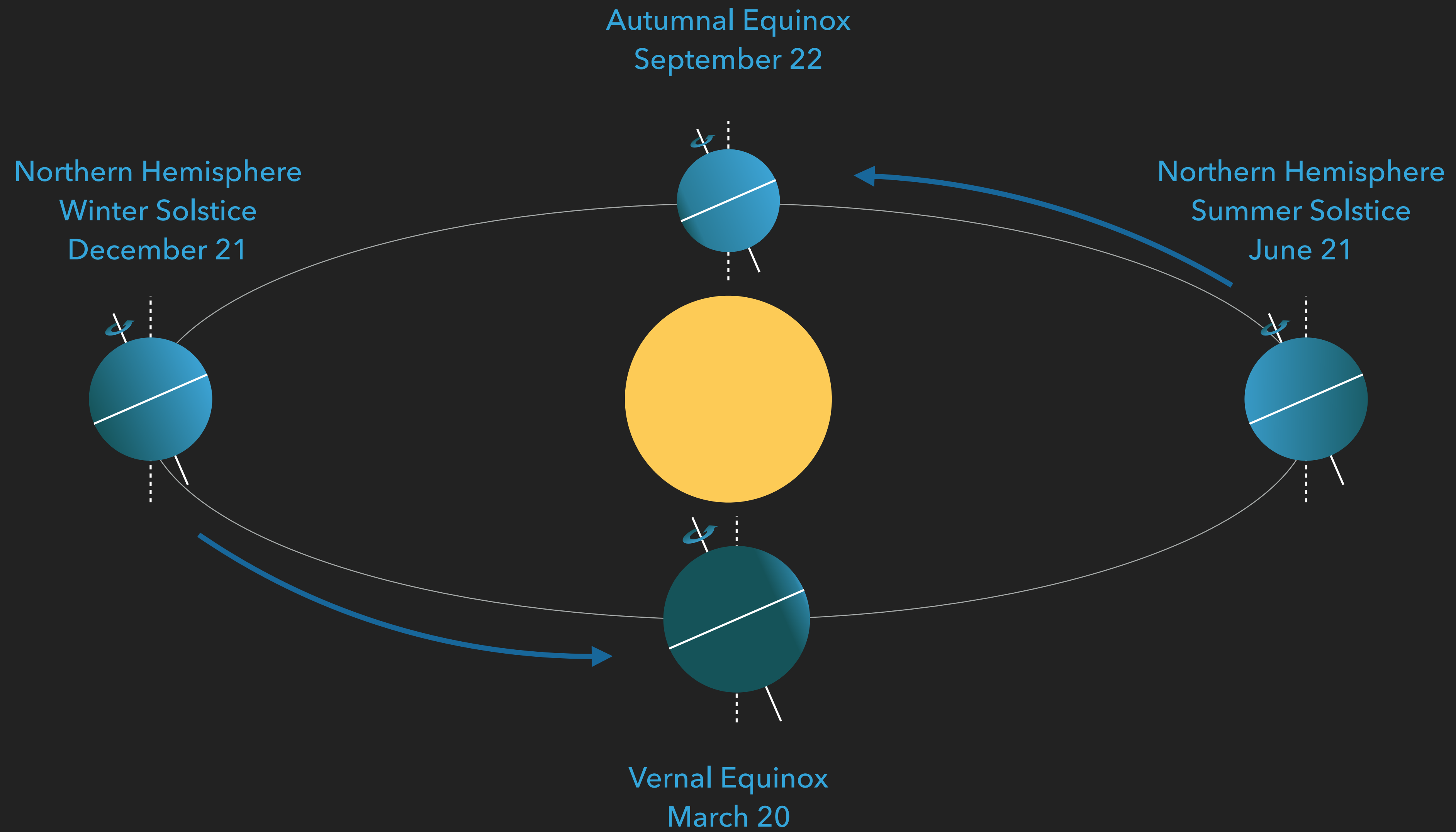




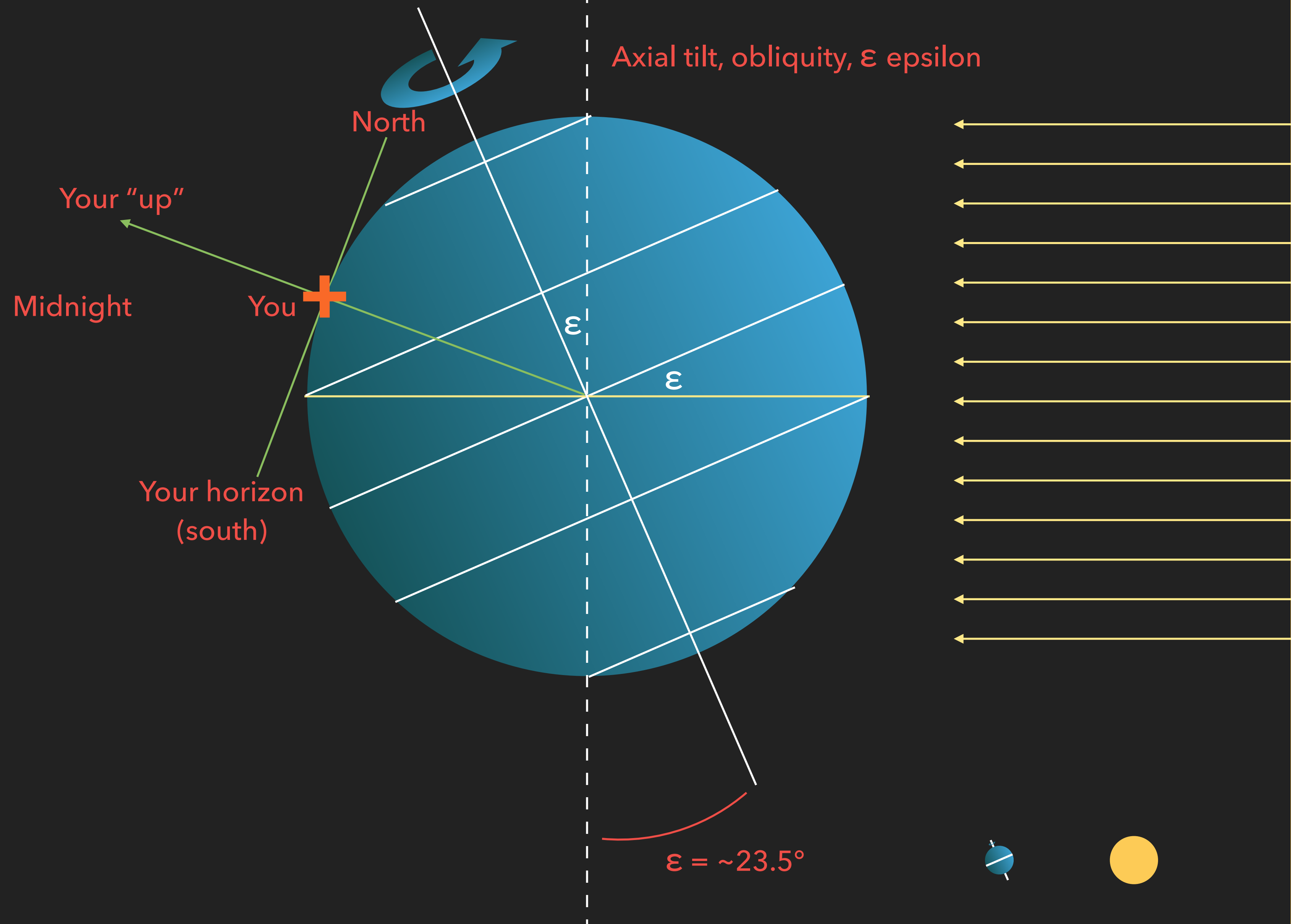








(PHEW)



Axial tilt, obliquity, ϵ epsilon

North

Your "up"

Midnight

You

Your horizon
(south)

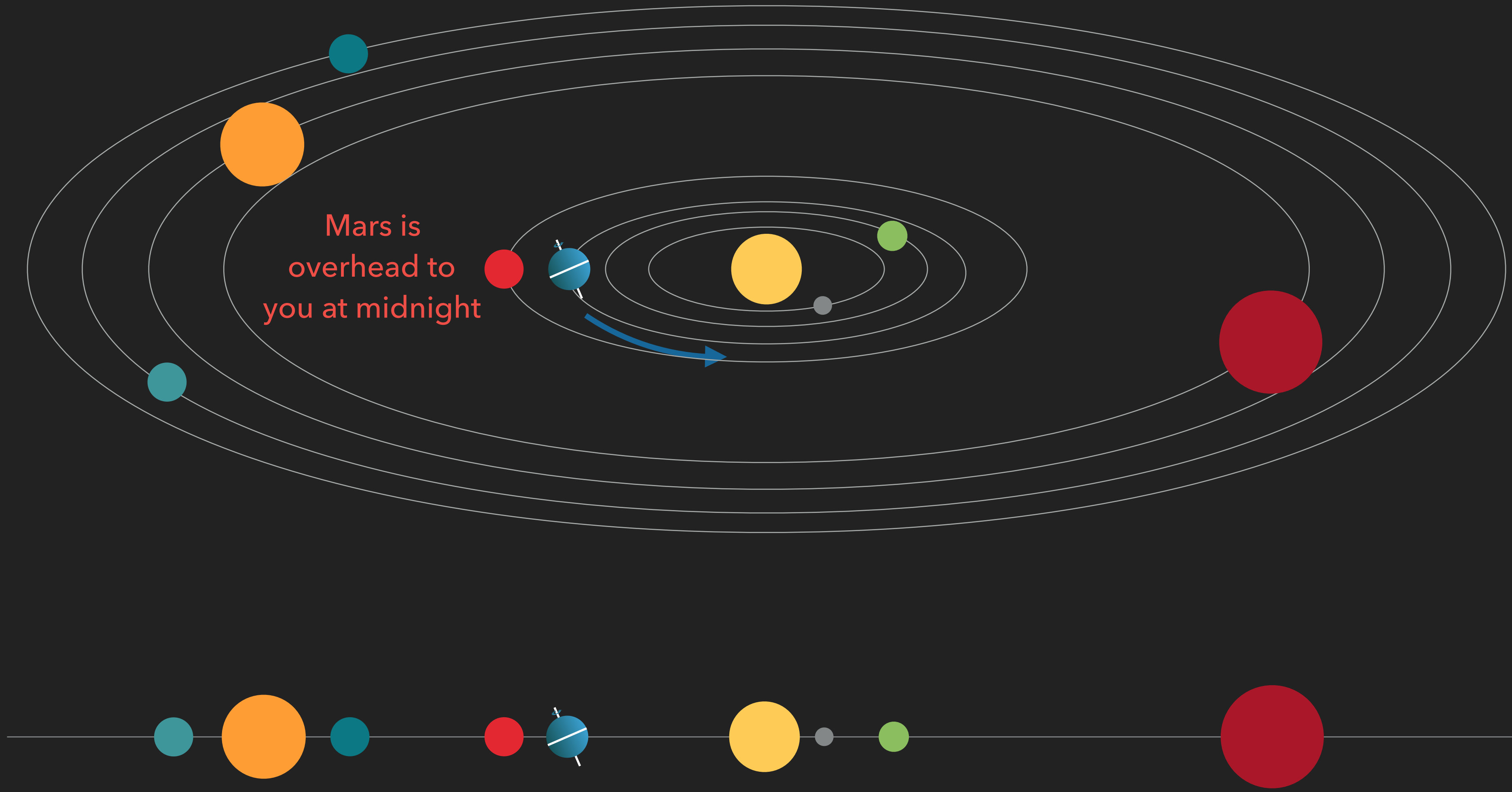
ϵ

ϵ

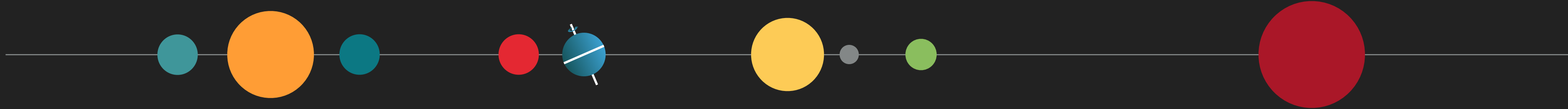
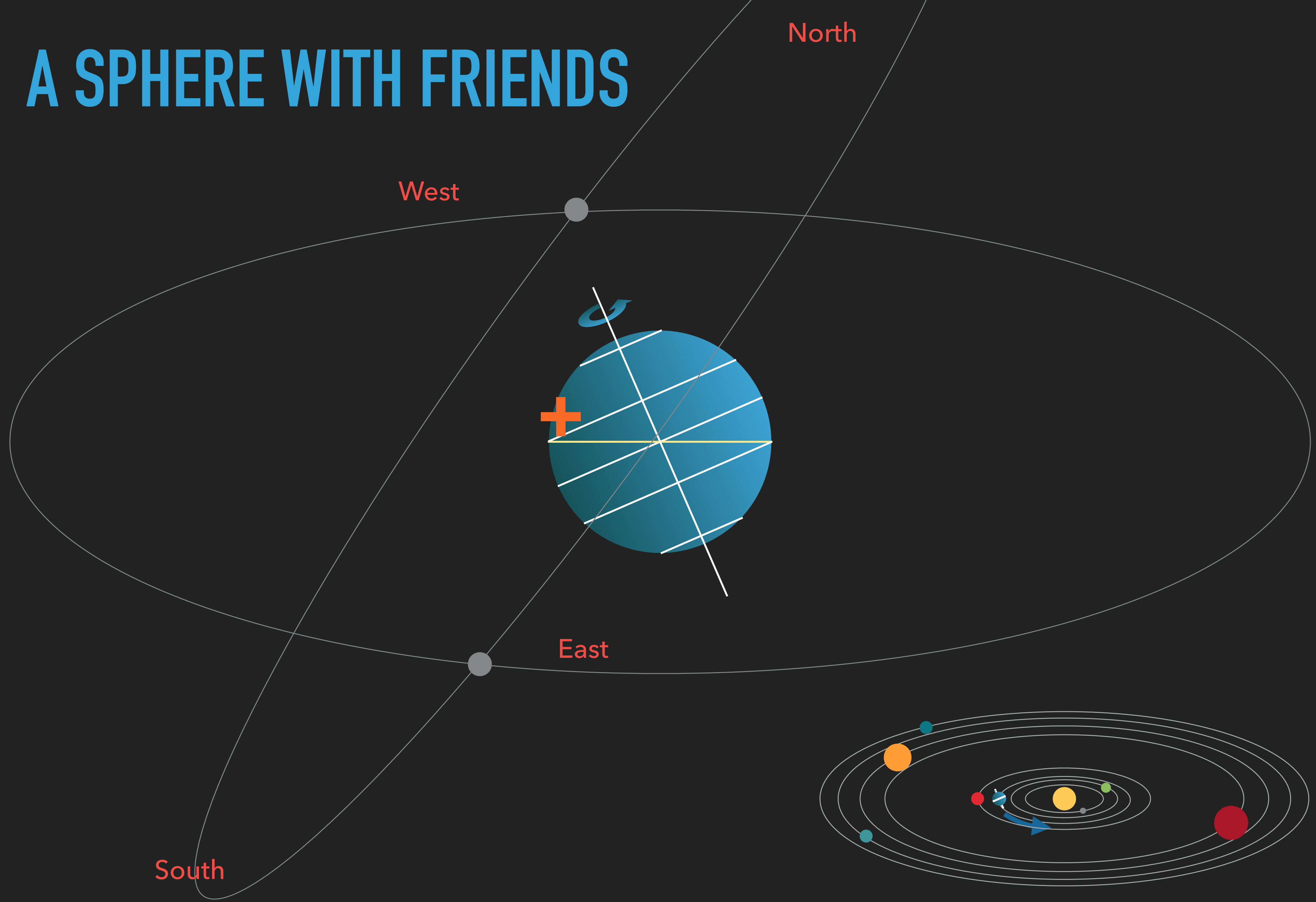
$\epsilon = \sim 23.5^\circ$

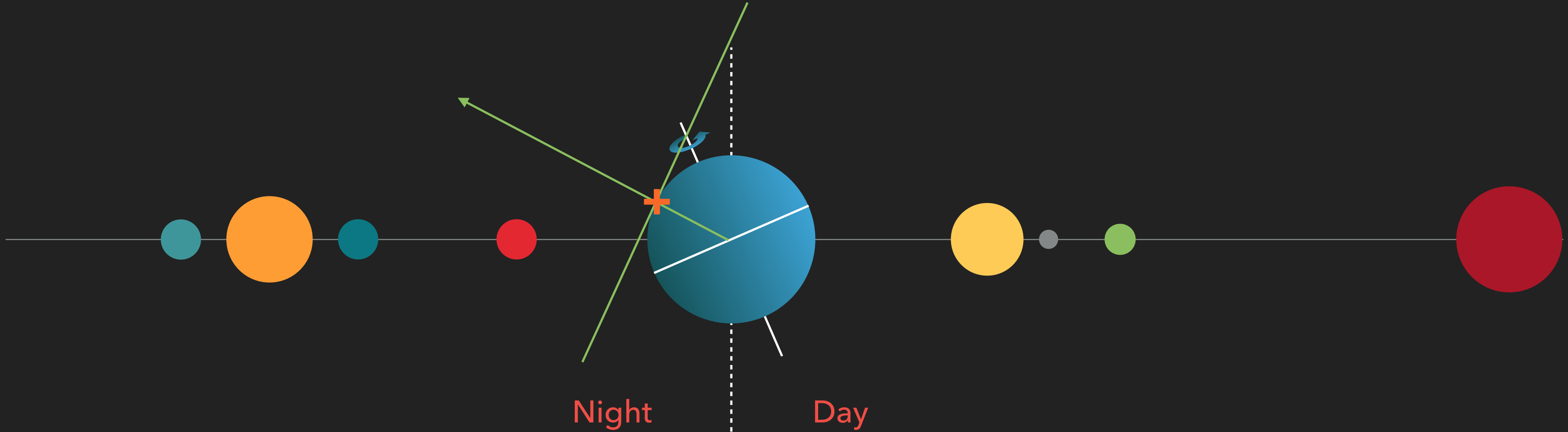
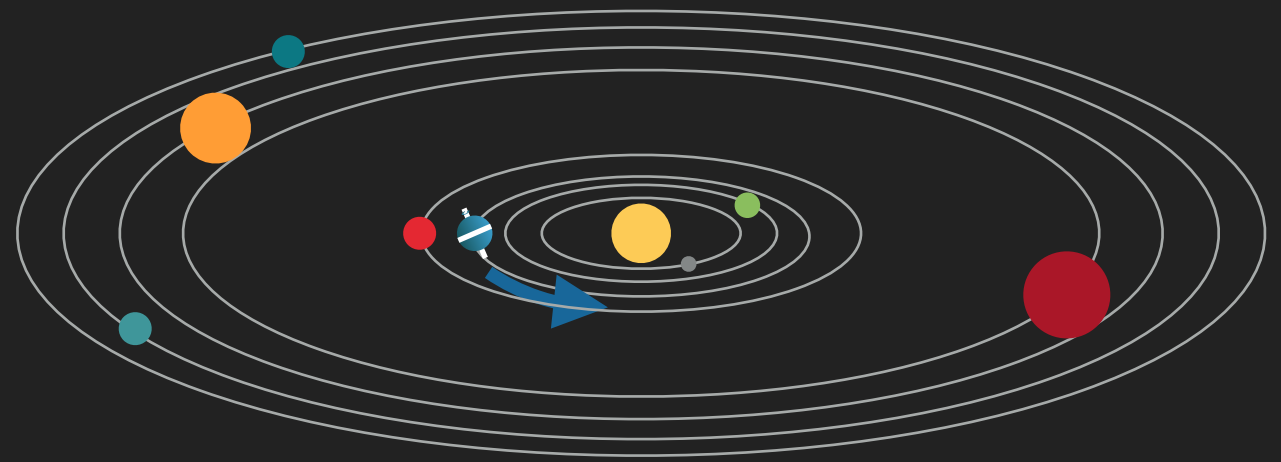


A SPHERE WITH FRIENDS

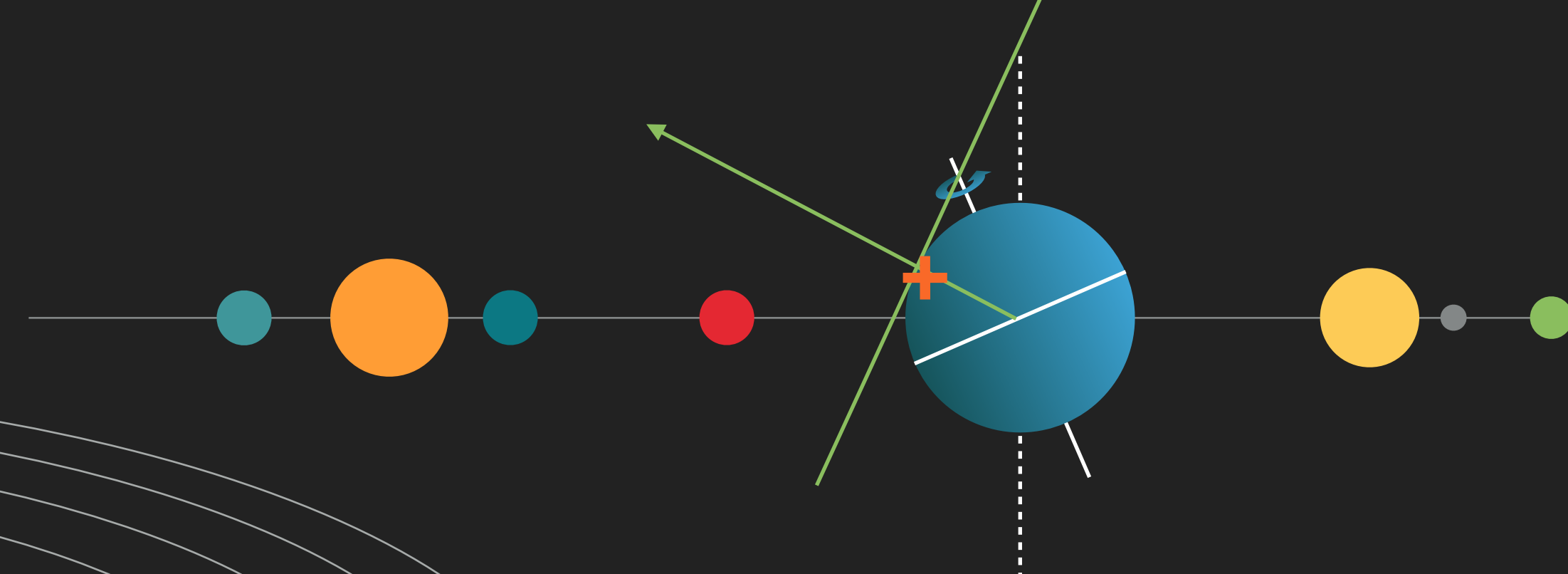
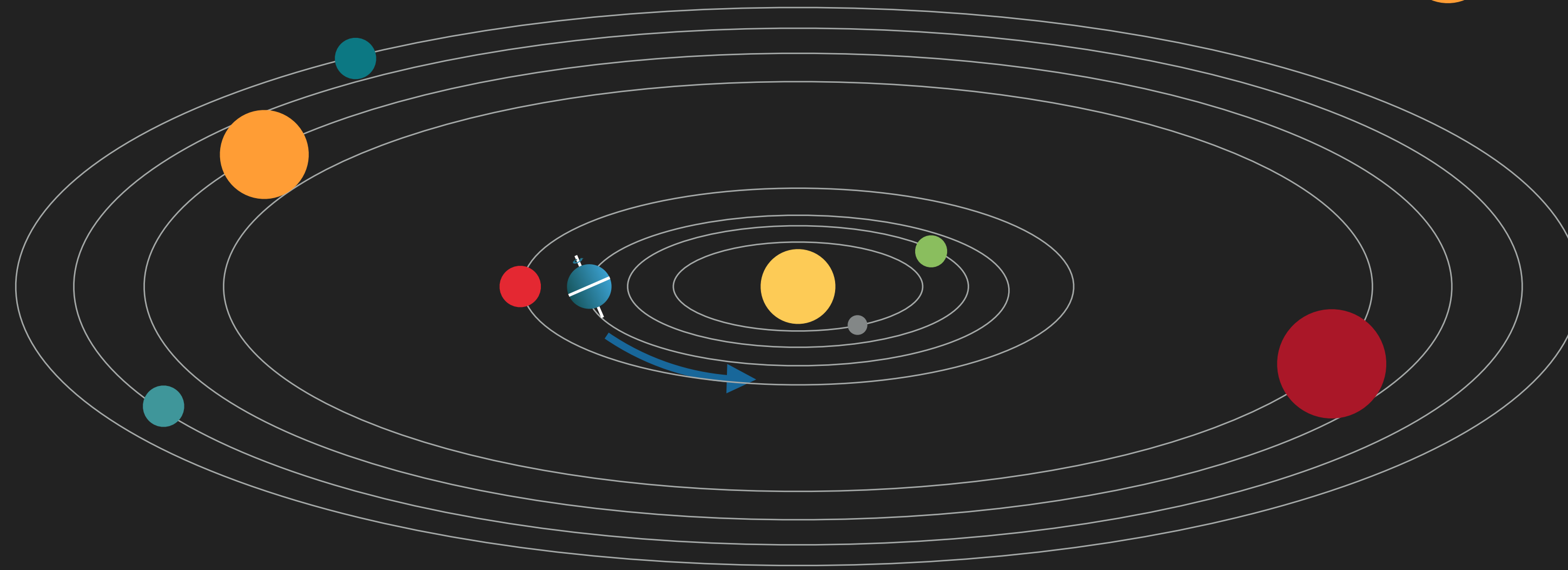


A SPHERE WITH FRIENDS





ECLIPTIC



View from "outside" =
Orrery

Mars is overhead

View for you =
Planetarium

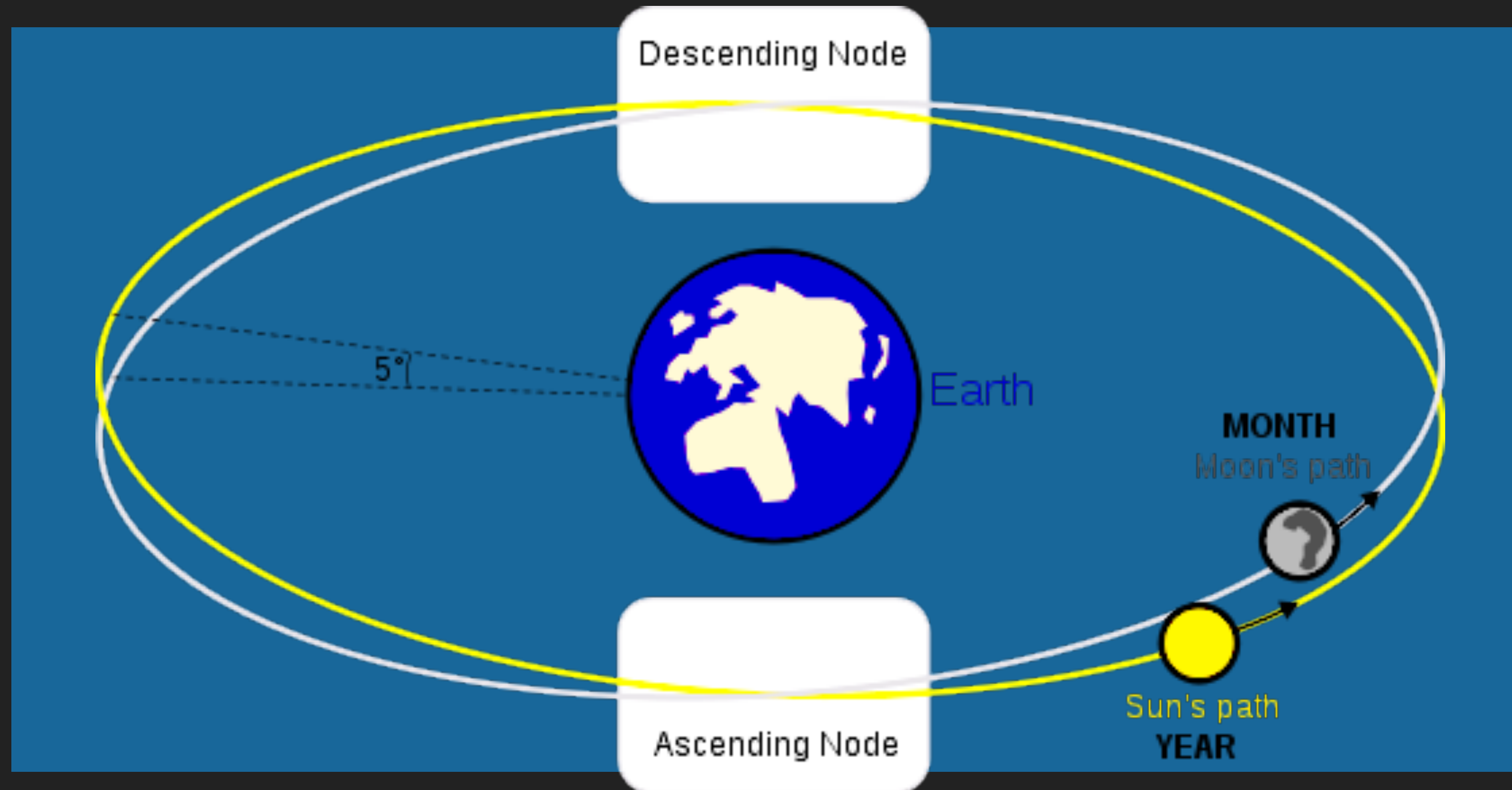
East

+

South

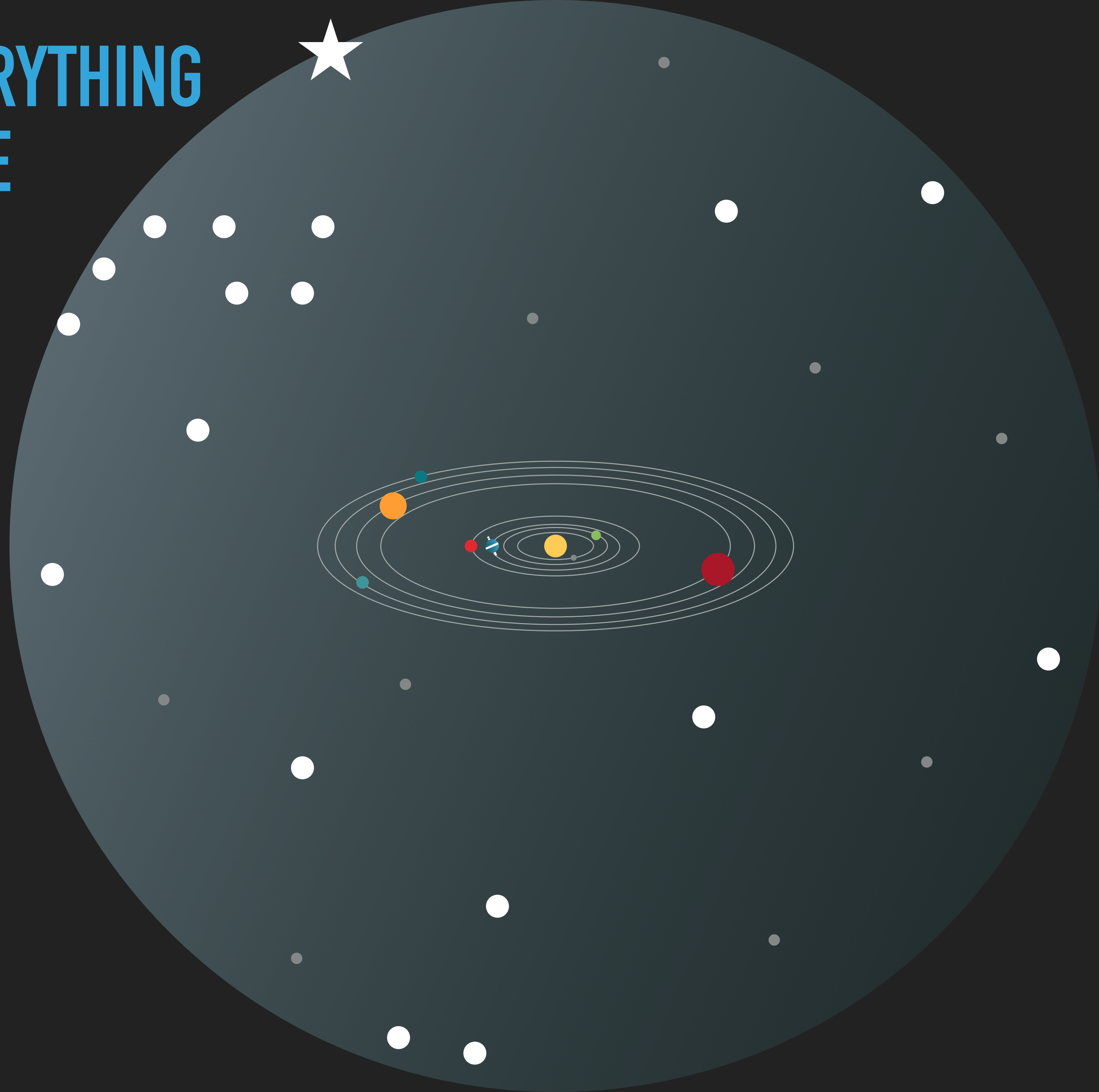
West

WHY "ECLIPTIC"

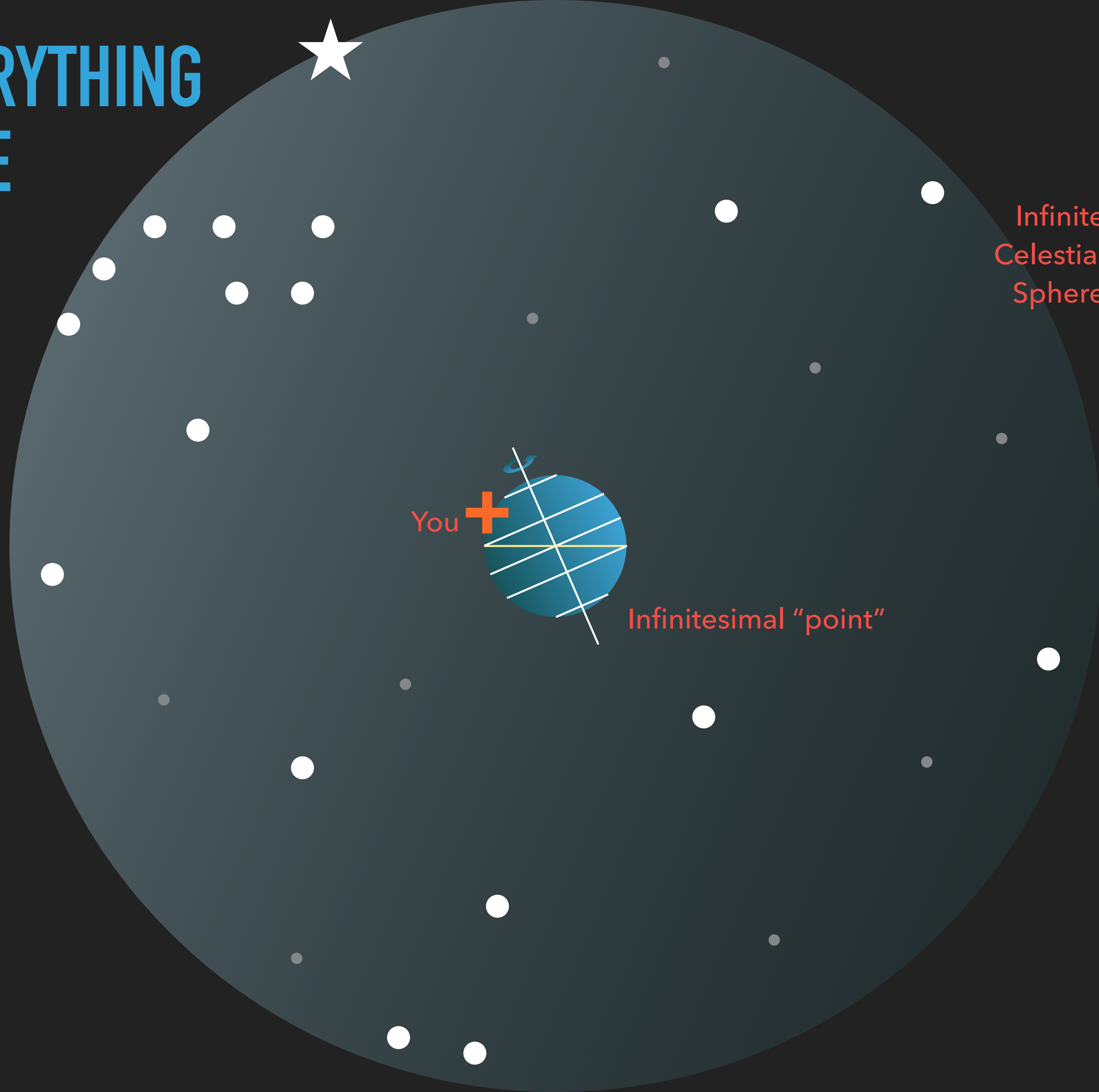


(PHEW X 2)

EVERYTHING
ELSE



EVERYTHING
ELSE

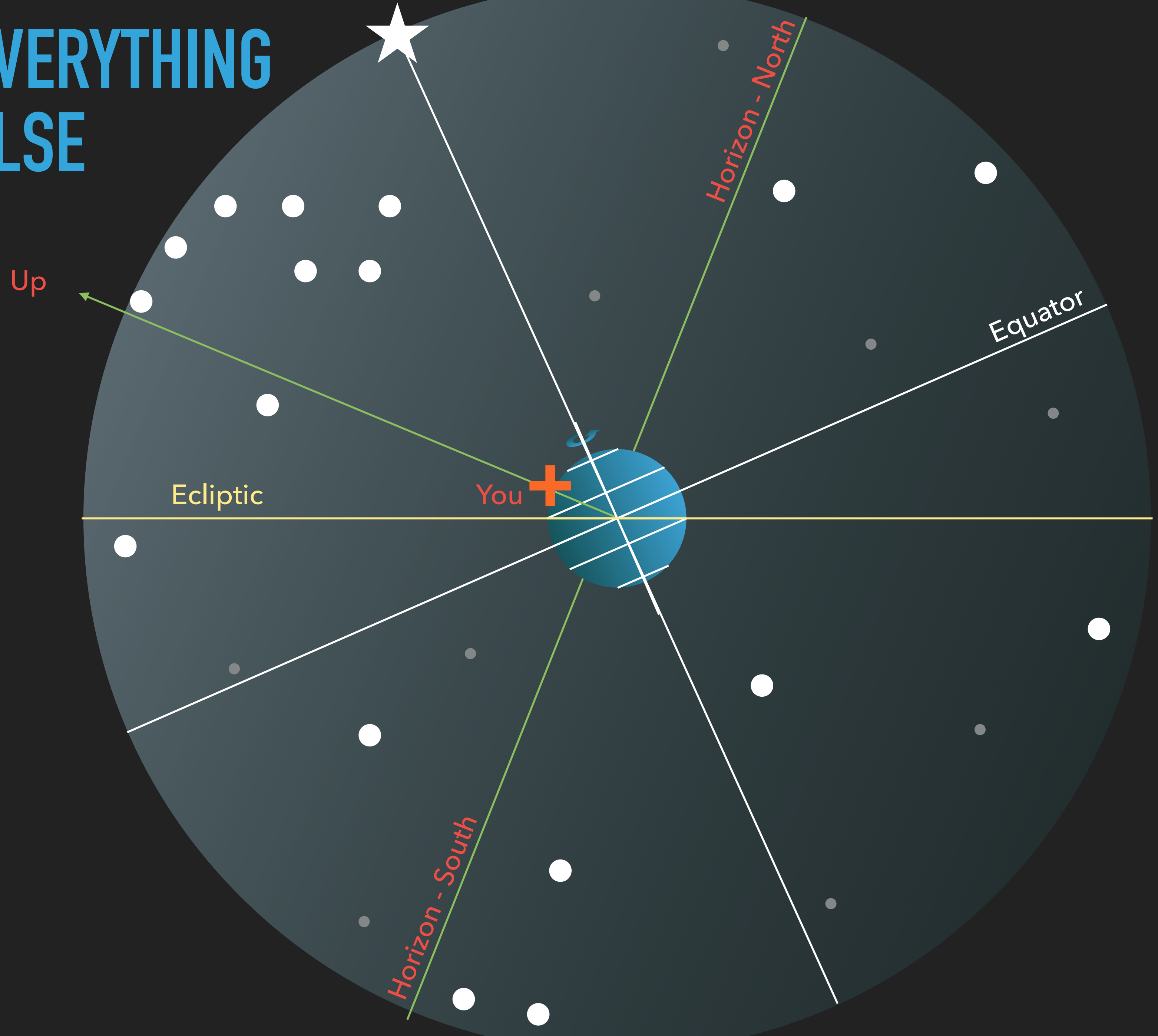


Infinite
Celestial
Sphere

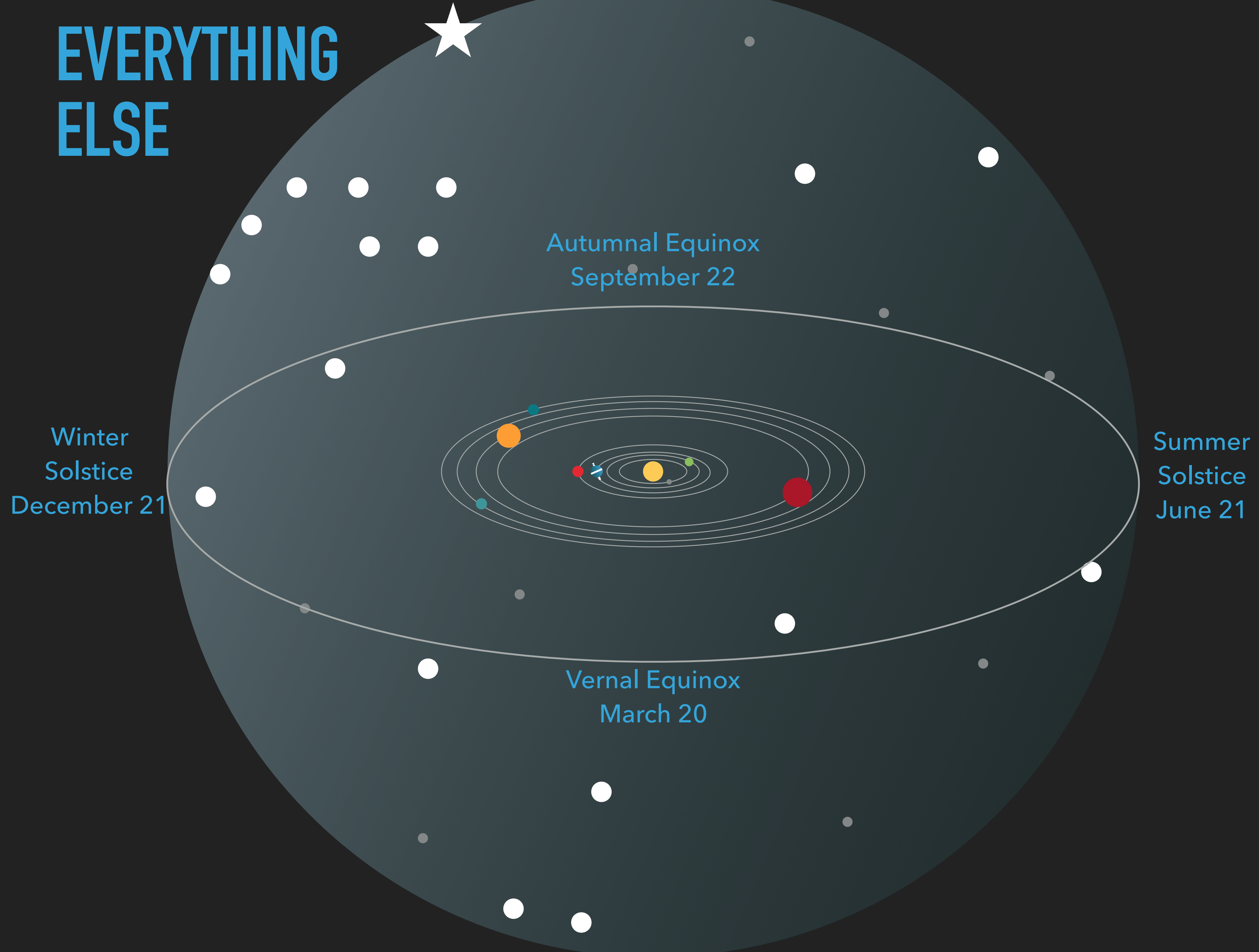
You +

Infinitesimal "point"

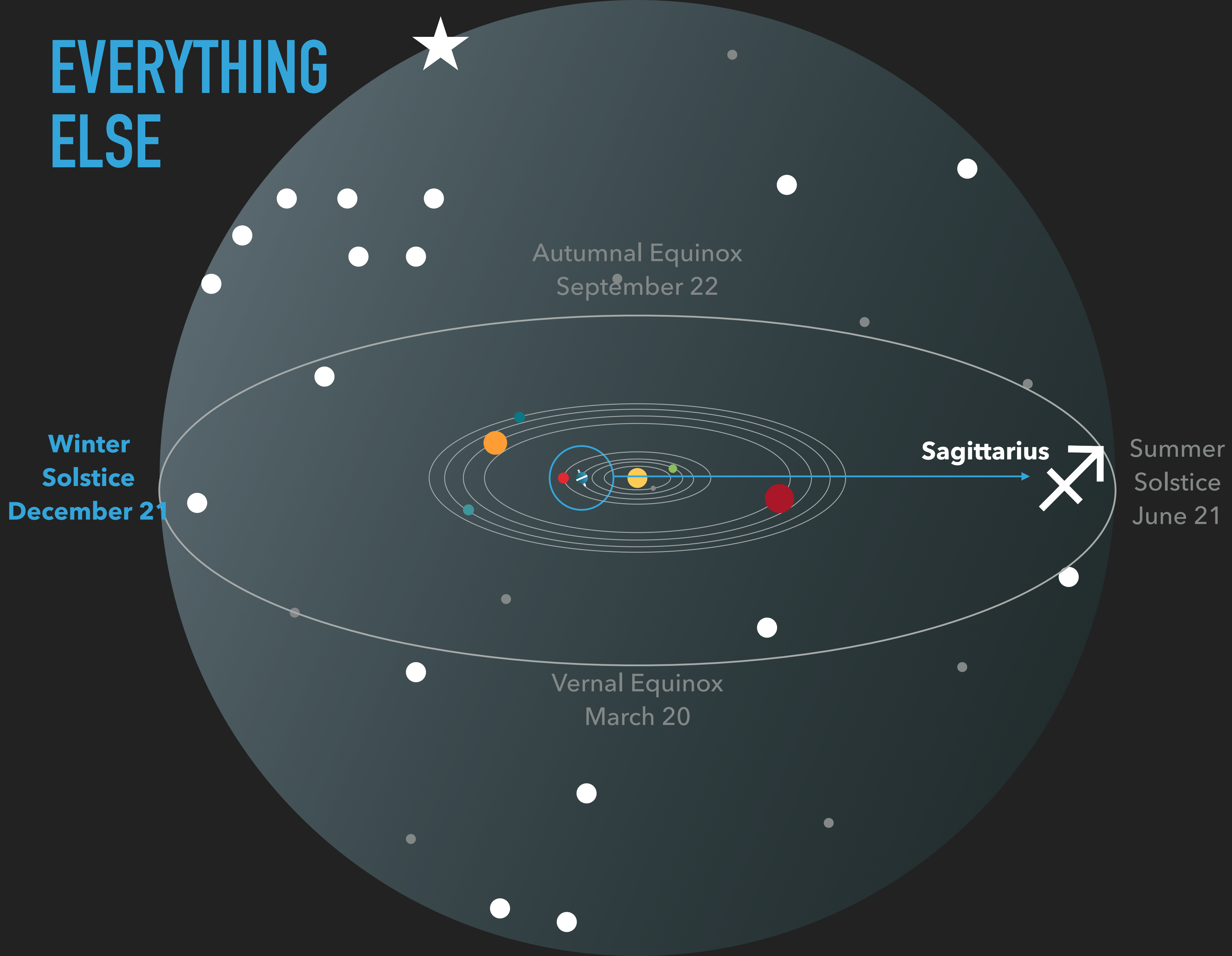
EVERYTHING
ELSE



EVERYTHING ELSE



**EVERYTHING
ELSE**



Autumnal Equinox
September 22

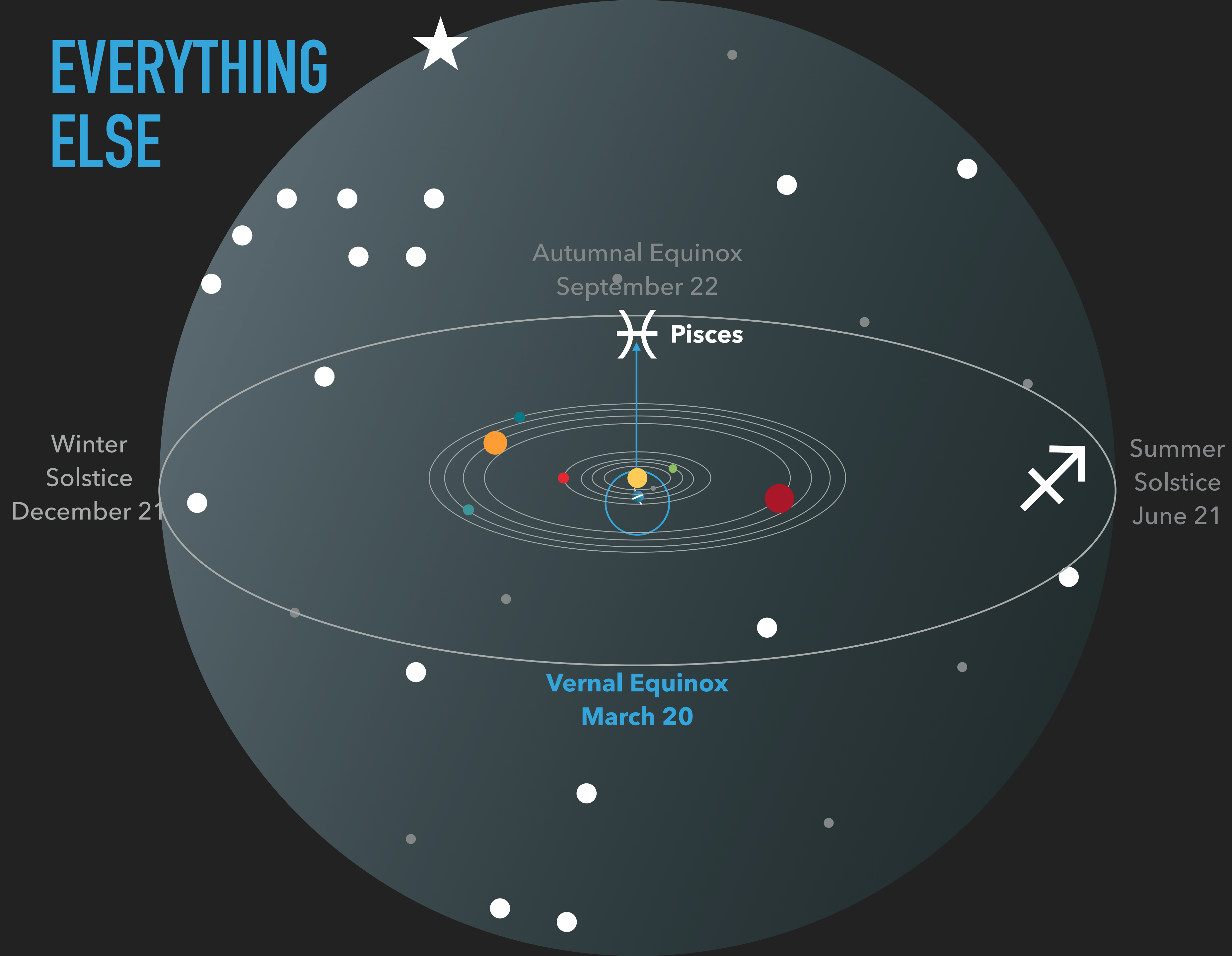
Winter
Solstice
December 21

Sagittarius ♐

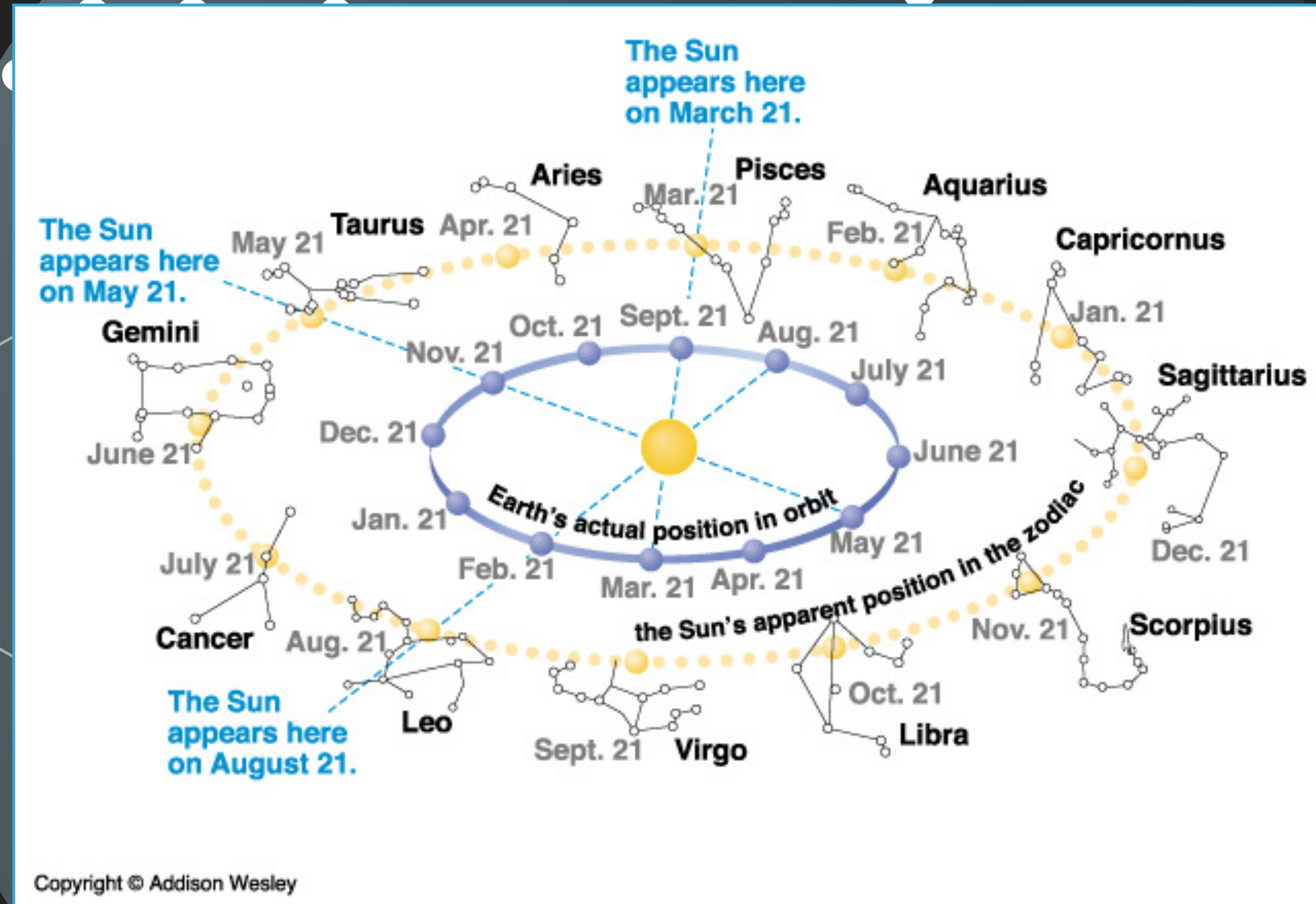
Summer
Solstice
June 21

Vernal Equinox
March 20

EVERYTHING ELSE



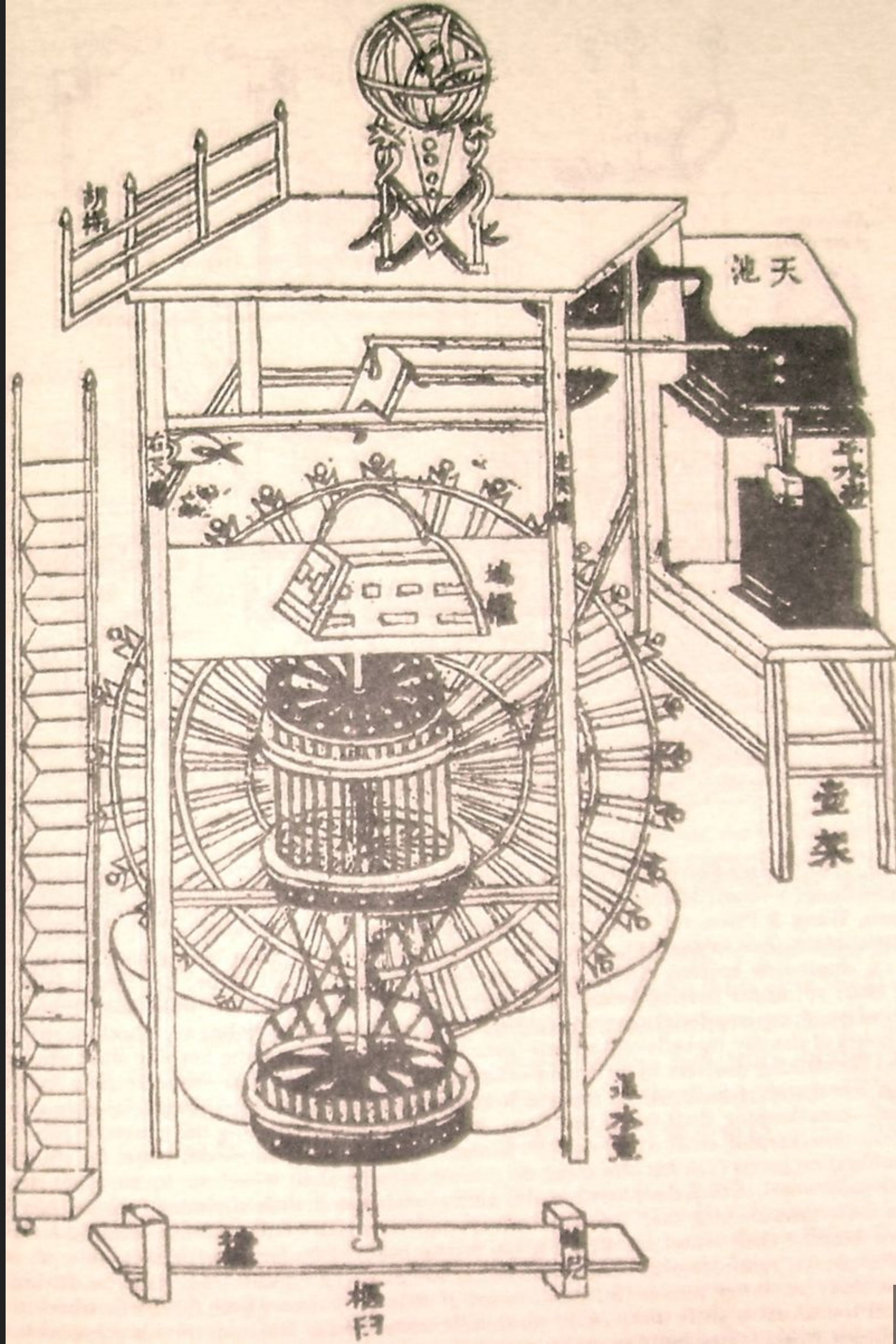
EVERYTHING ELSE



Winter
Solstice
December 21

Summer
Solstice
June 21

(PHEW X 3)





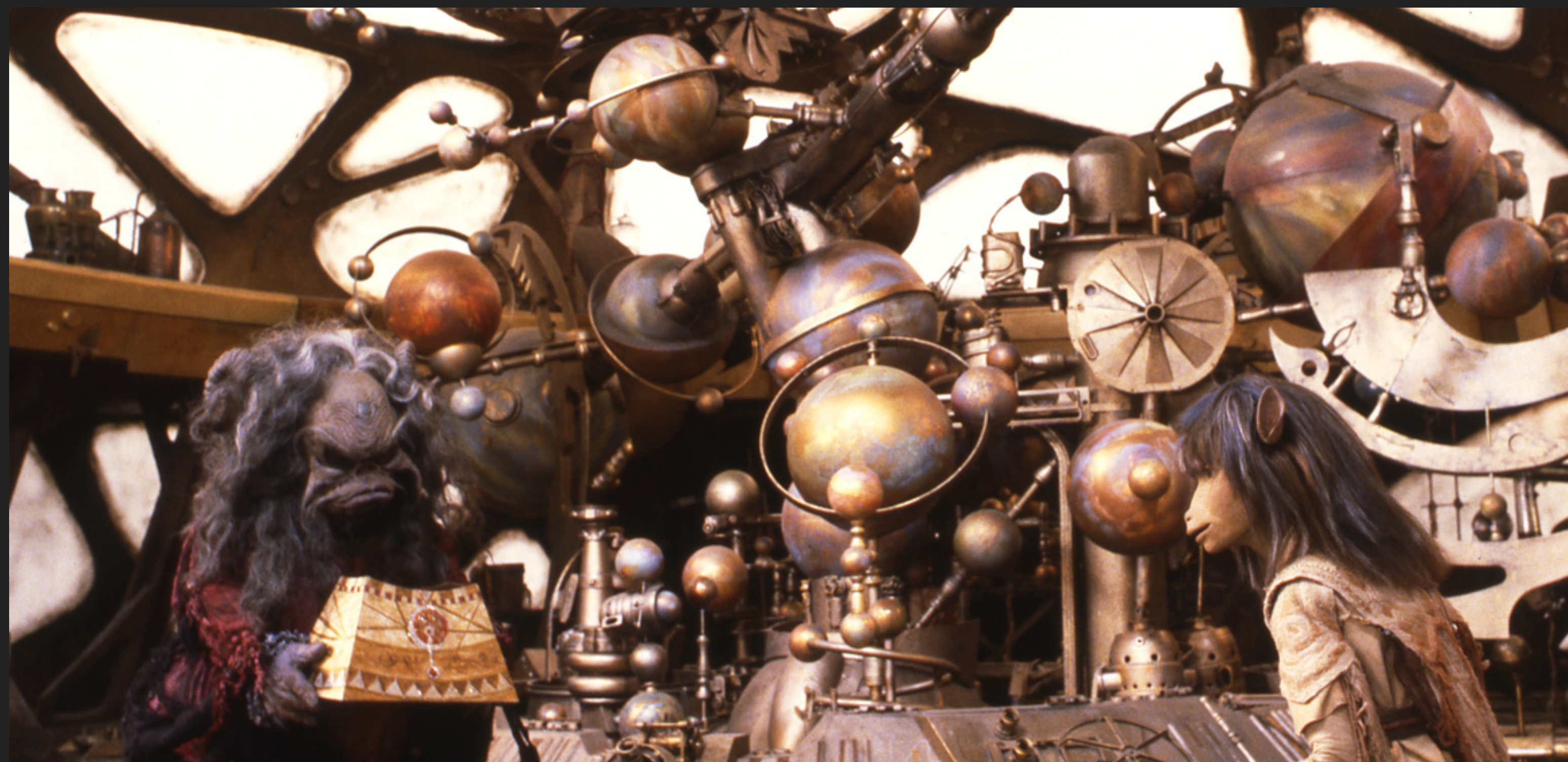
SU SONG ASTRONOMICAL WATER CLOCK

01094 CE, FIRST ESCAPEMENT

“Thus if the water is made to pour with perfect evenness, then the comparison of the rotary movements (of the heavens and the machine) will show no discrepancy or contradiction; **for the unresting follows the unceasing.**”



**ARMILLARY
SPHERE MADE
BY GIROLAMO
DELLA
VOLPAIA,
FLORENCE,
ITALY, 01554**

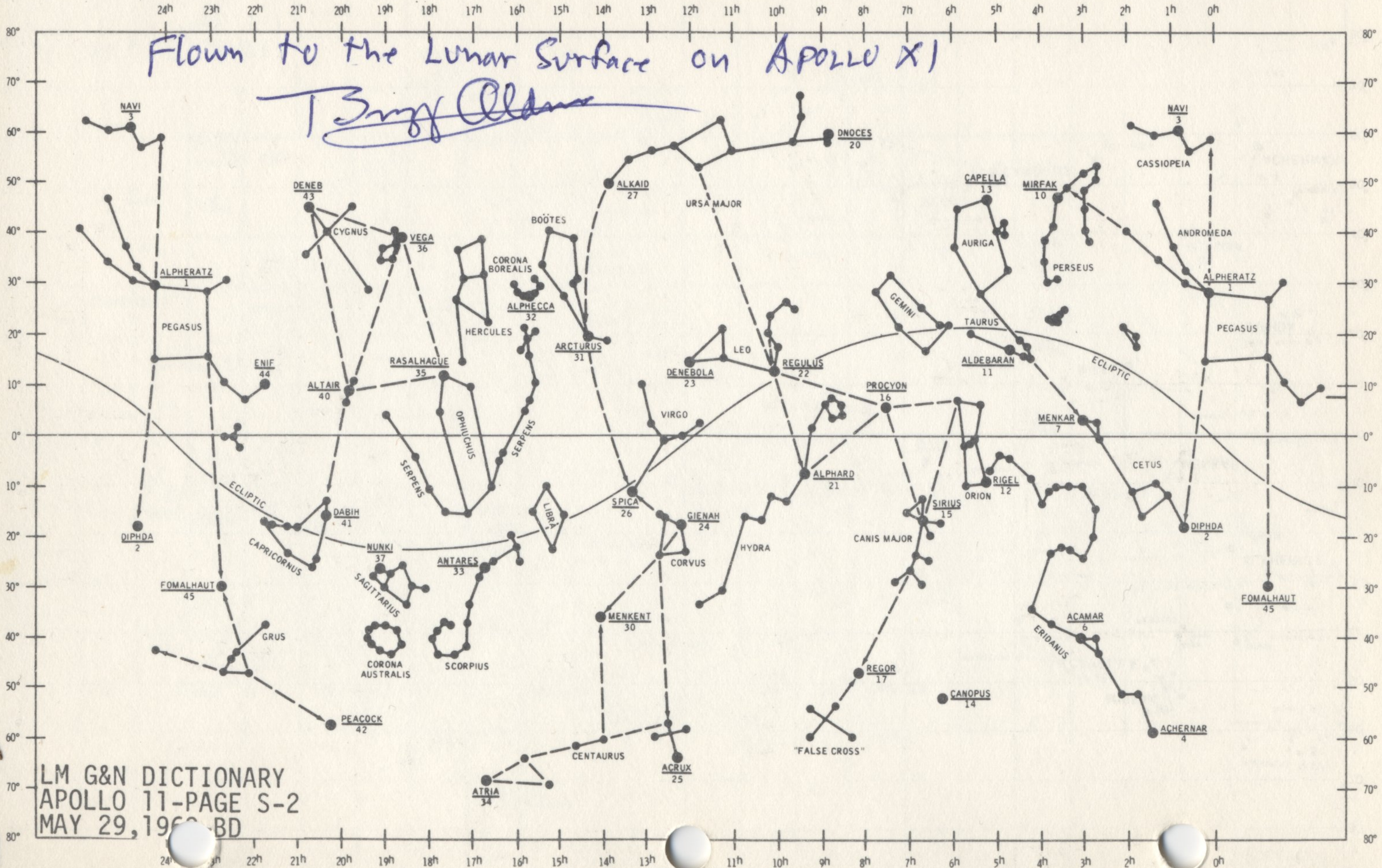


AUGHRA'S ORRERY

Dark Crystal

Flown to the Lunar Surface on Apollo XI

T Buzz Aldrin



LM G&N DICTIONARY
APOLLO 11-PAGE S-2
MAY 29, 1969 BD

Voyager 1 Has Date with a Star x | NASA's Voyager 2 heads for st... x | Star Atlas x +

staratlas.com

S 176° Alt 41°
FOV 137° x 93°

Castor
Pollux
GEMINI
CANCER
AURIGA
Aldebaran
TAURUS
Moon
Uranus
Betelgeuse
ORION
Rigel
CETUS
MONOCEROS
Sirius
LEPUS
ERIDANUS
CANIS MINOR
Procyon
CANIS MAJOR
Adhara
PUPPIS
COLUMBA
CAELUM
FORNAX
PYXIS

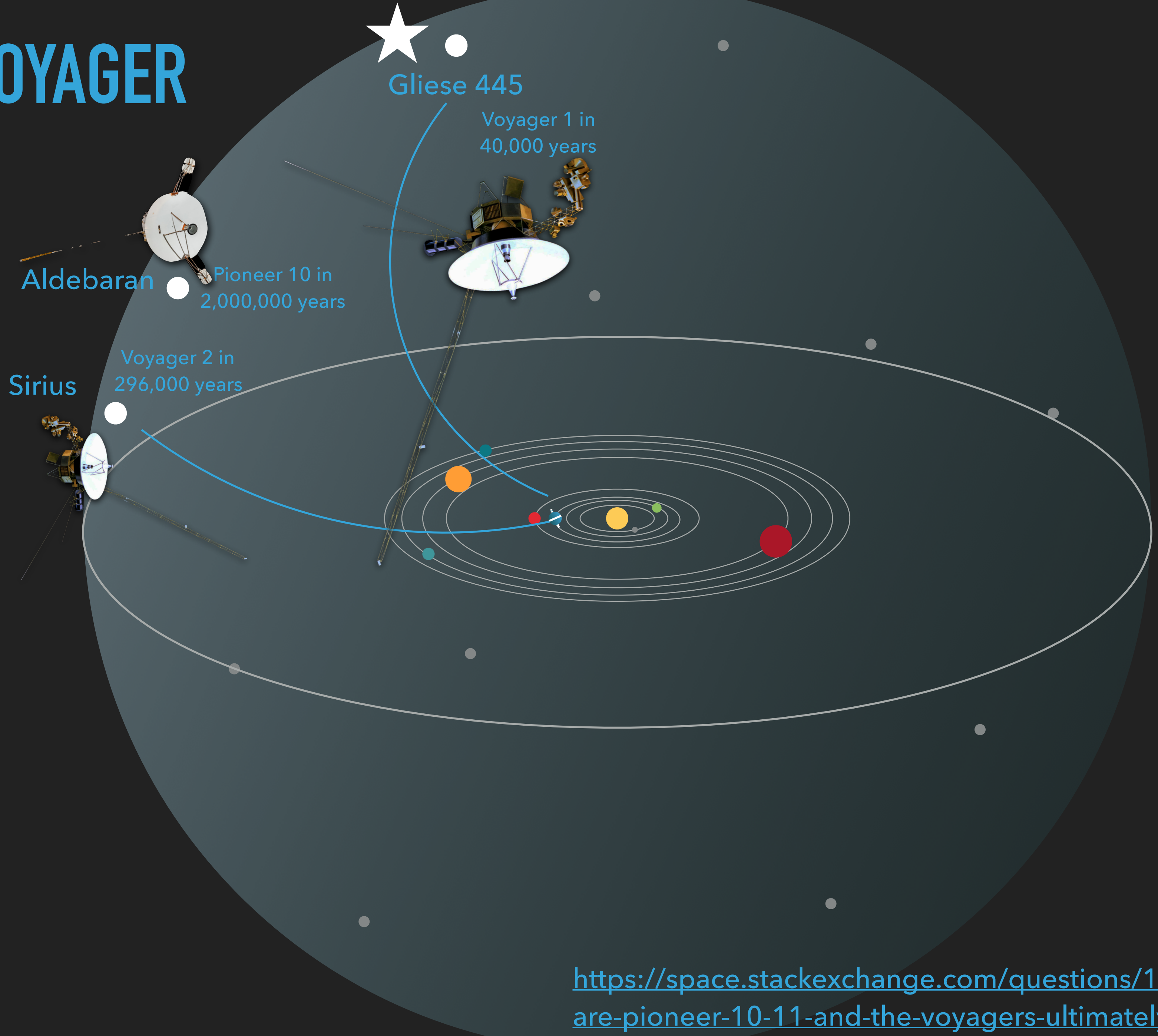
2019 Dec 10 00 : 19 : 42

Montclair, Essex County, USA

Star Atlas © 20... Neave Interactiv...

The image shows a screenshot of the Star Atlas web application. The main display is a star chart with various constellations labeled, including Auriga, Gemini, Cancer, Taurus, Orion, Monoceros, Canis Major, Canis Minor, Lepus, Eridanus, Cetus, Fornax, Columba, Puppis, and Pyxis. Key stars like Aldebaran, Betelgeuse, Rigel, and Sirius are marked. The Moon and planet Uranus are also visible. The interface includes a top navigation bar with browser tabs, a search bar, and a date/time selector at the bottom left. A location indicator at the bottom right shows 'Montclair, Essex County, USA'. A blue circle highlights the 'S' icon, which represents the current orientation of the star chart.

VOYAGER



<https://space.stackexchange.com/questions/1621/where-are-pioneer-10-11-and-the-voyagers-ultimately-headed>