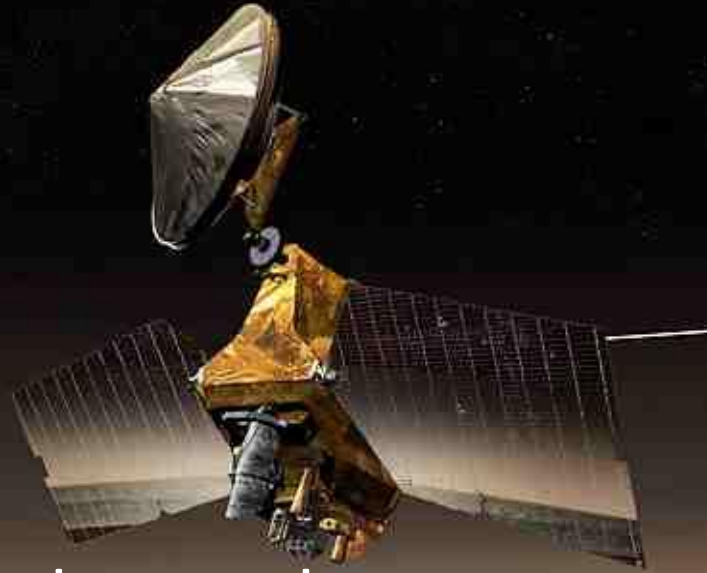


Space Robots

. . . cold, hard, inhuman.



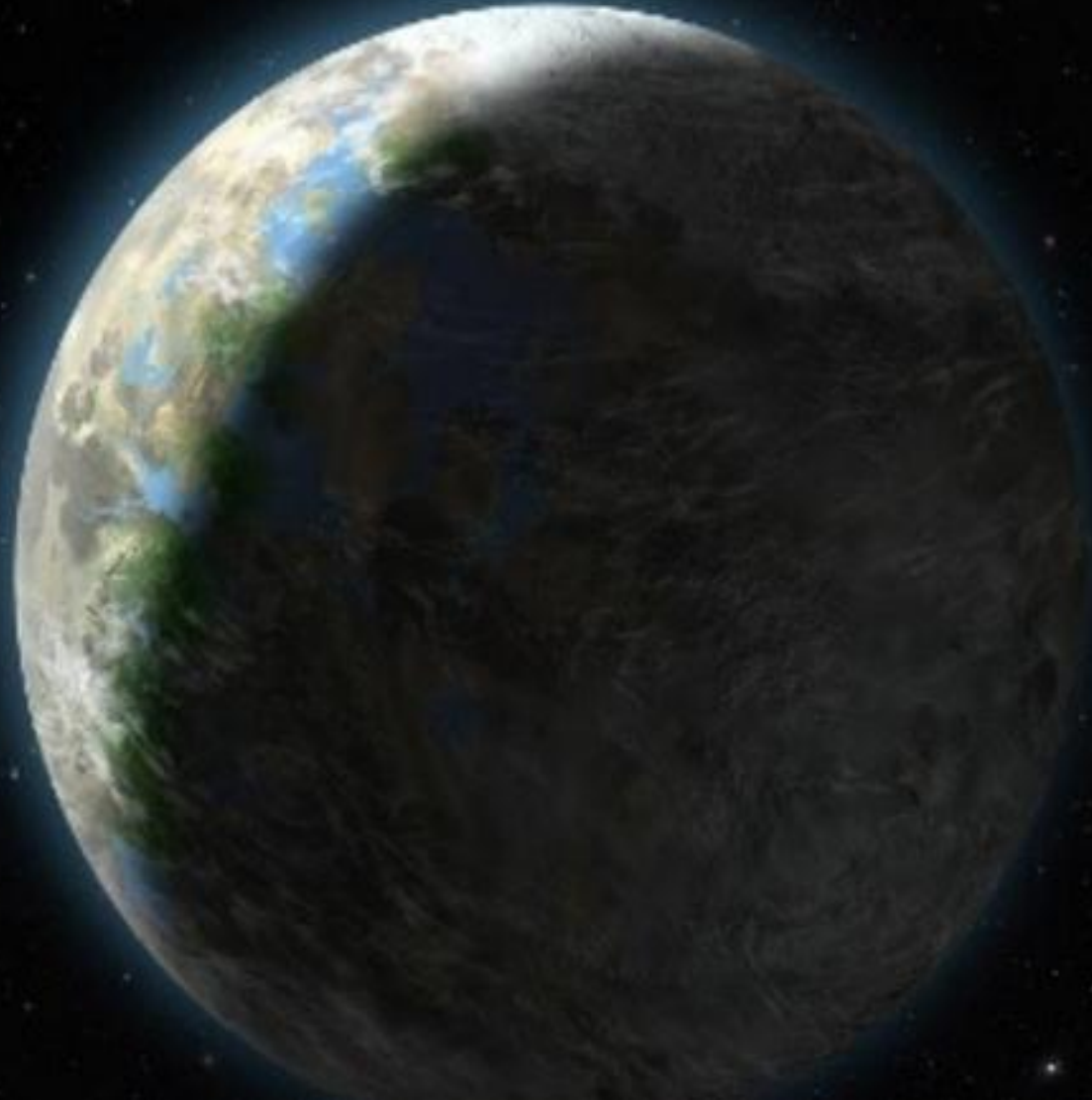
Do we really want robots to be our space ambassadors?

For all these reasons . . .

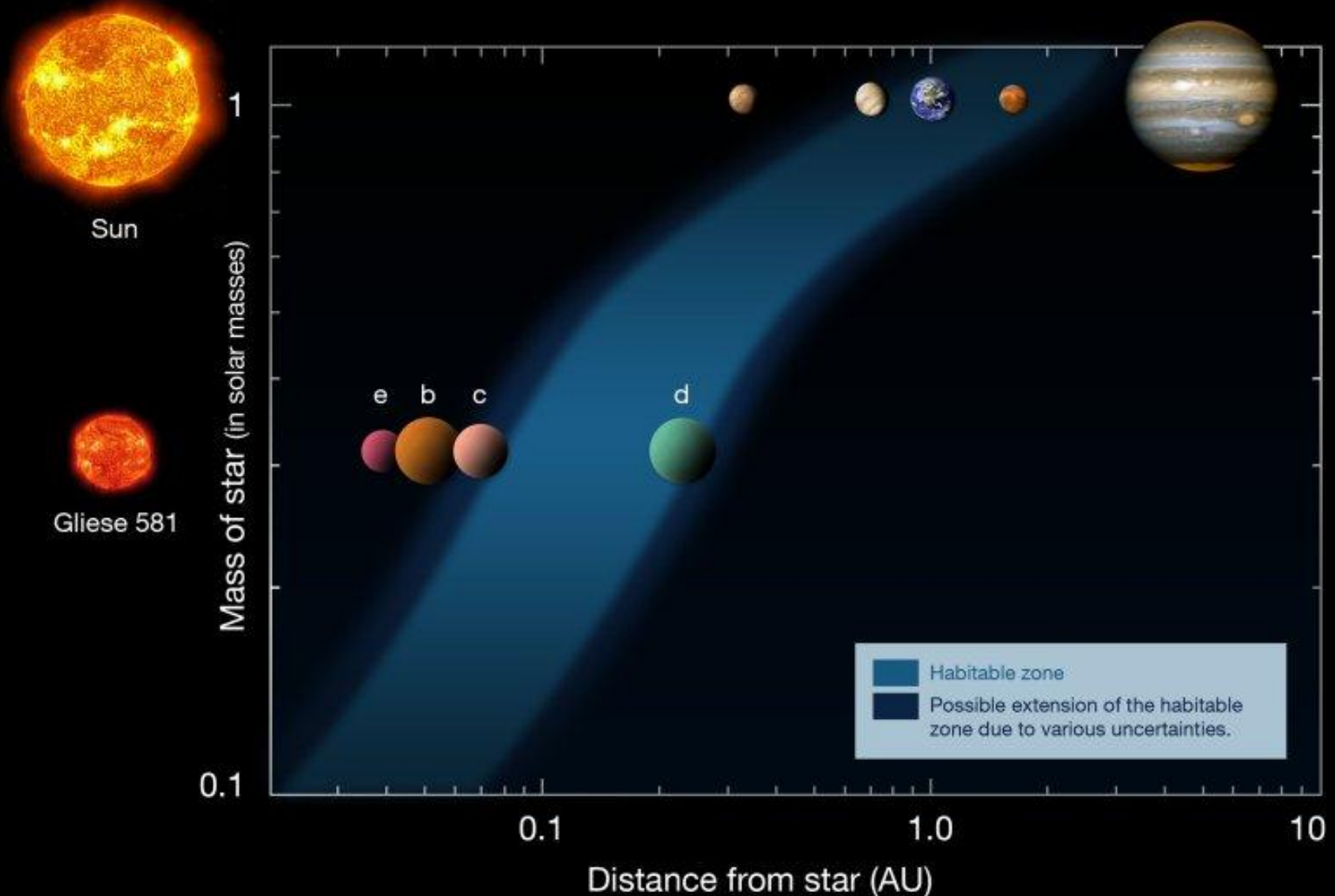
YES!

Created and presented by
Rob Hanson

Gliese 581g: planet
may orbit a dim red
dwarf star called
Gliese 581 – a
“mere” 20 light
years away



First, the good news: Seems to be in “Goldilocks Zone” to maintain liquid water on its surface



“One small step for Man, one giant leap for Mankind.”



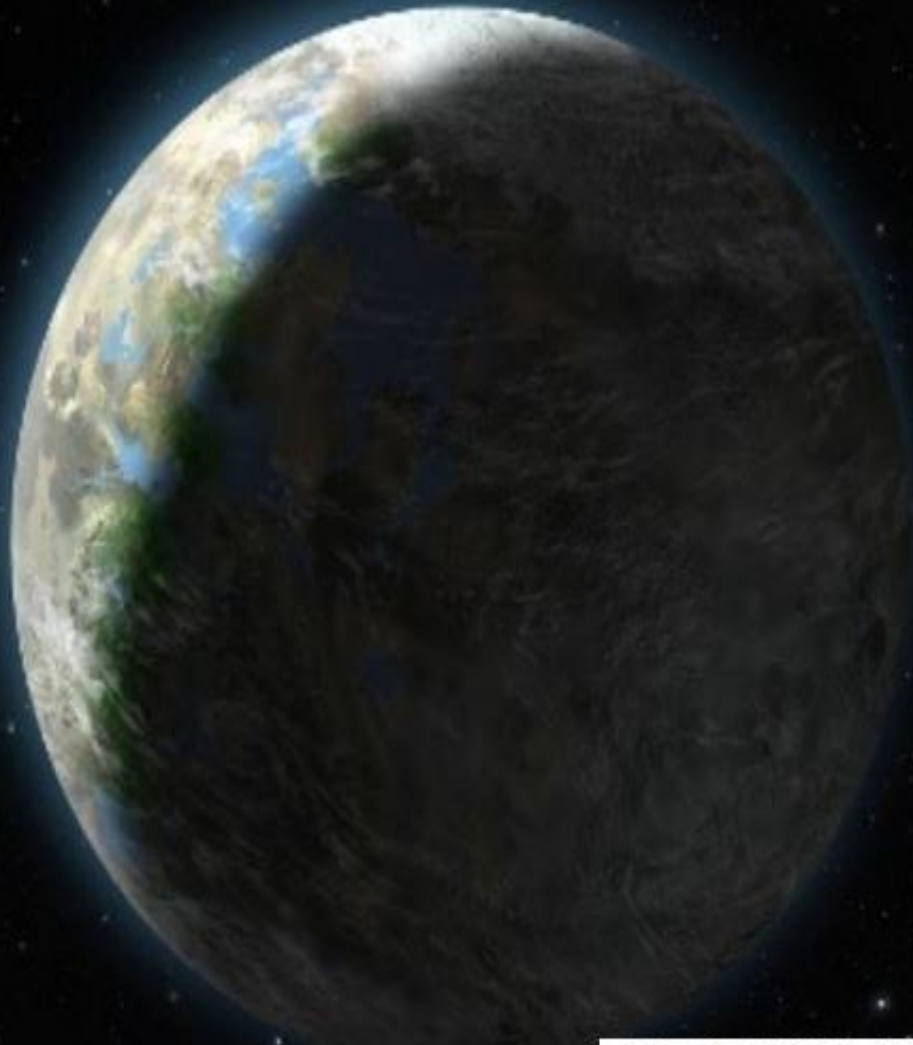
Now, the not so good news . . .

Is the wobble really there?

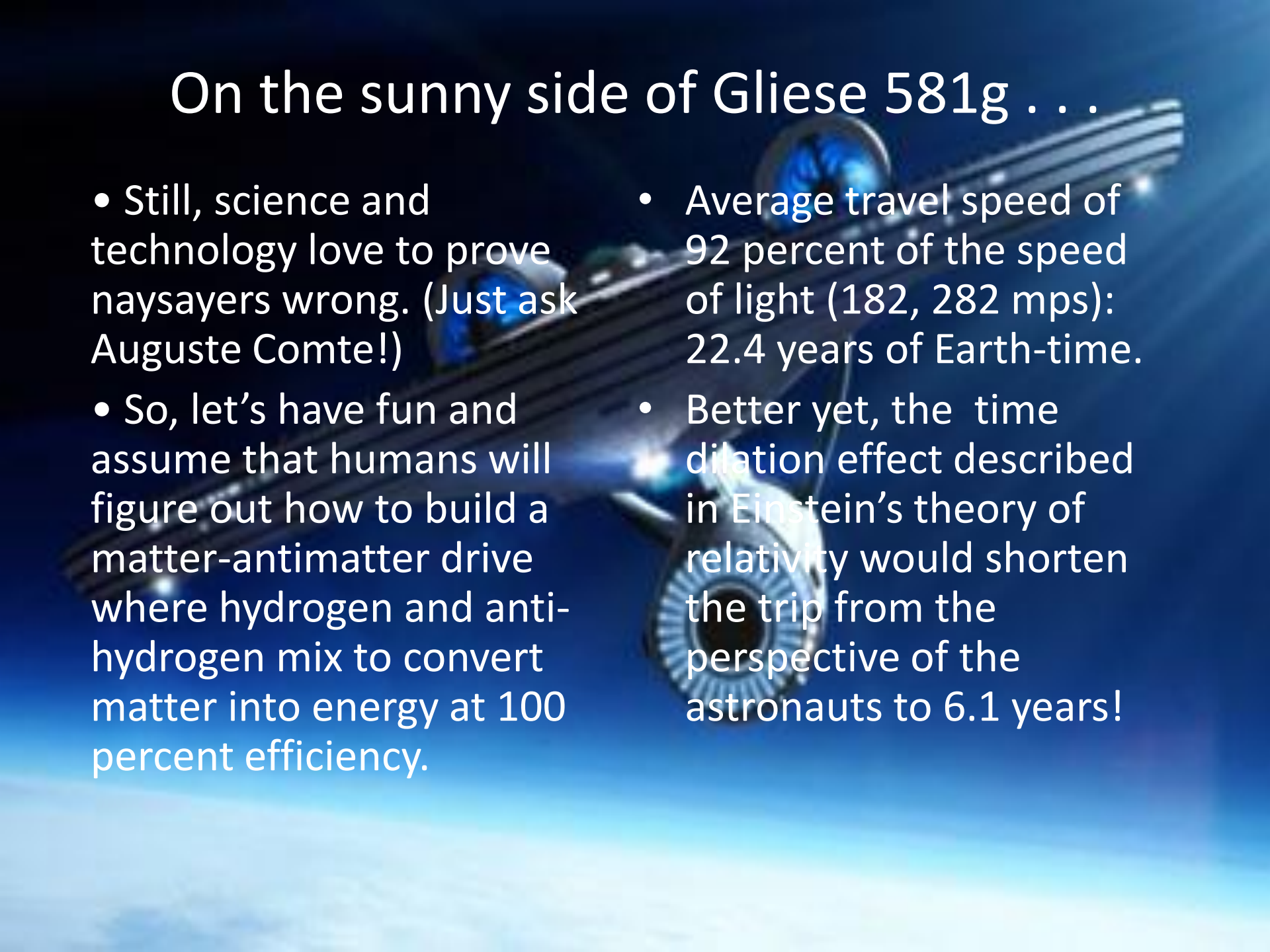
- *Geneva Observatory: neither planet g nor planet f was detectable*

If planet is there, due to proximity to parent star, most likely tidally locked

Travel time: 180,000 years using current technology.

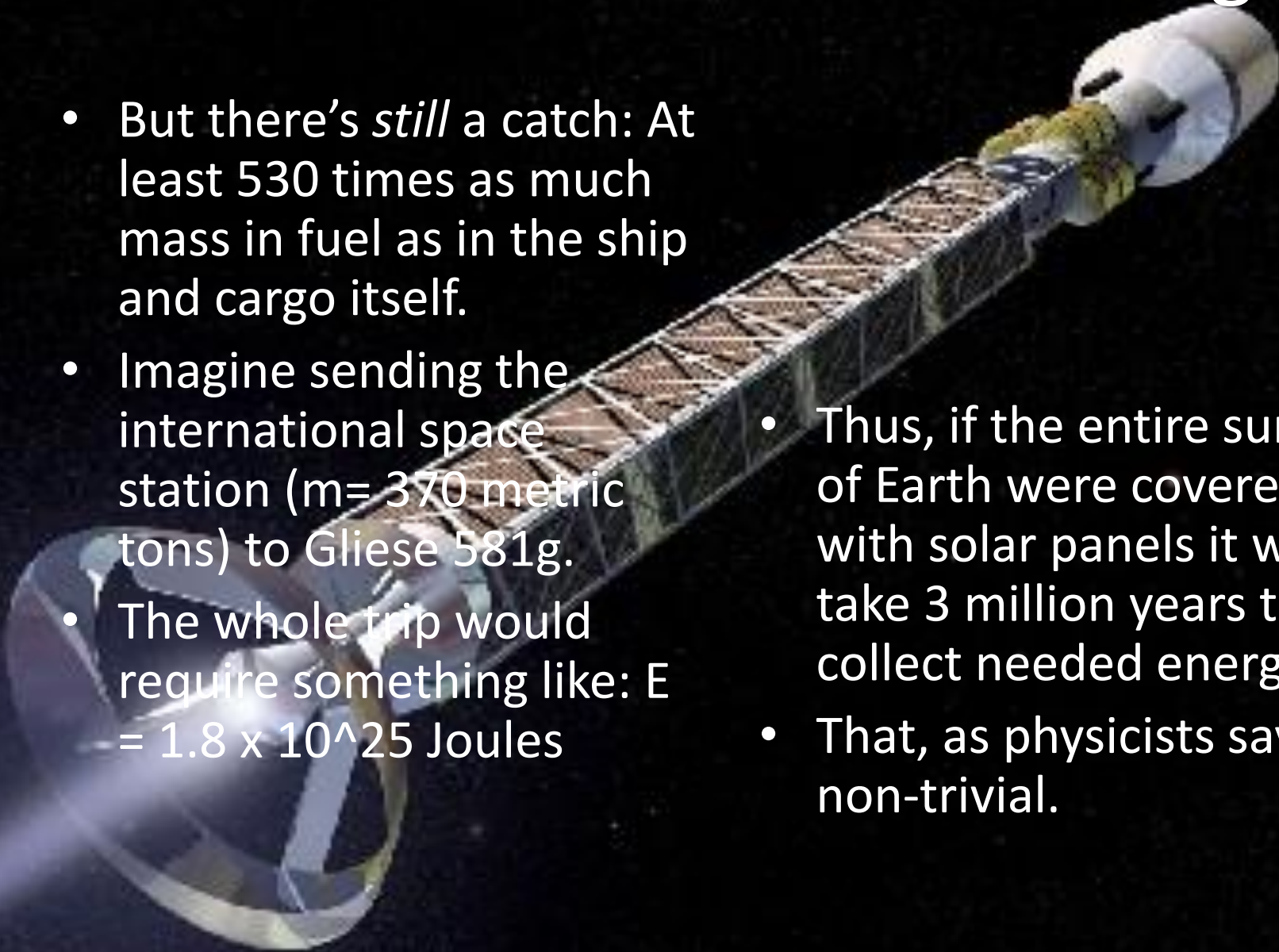


On the sunny side of Gliese 581g . . .

- Still, science and technology love to prove naysayers wrong. (Just ask Auguste Comte!)
 - So, let's have fun and assume that humans will figure out how to build a matter-antimatter drive where hydrogen and anti-hydrogen mix to convert matter into energy at 100 percent efficiency.
 - Average travel speed of 92 percent of the speed of light (182, 282 mps): 22.4 years of Earth-time.
 - Better yet, the time dilation effect described in Einstein's theory of relativity would shorten the trip from the perspective of the astronauts to 6.1 years!
- 
- A futuristic spacecraft with a large, circular, multi-segmented engine or propeller at the rear is shown flying through space. The Earth is visible in the background, appearing as a bright blue and white sphere. The spacecraft is angled towards the right, and its wings or solar panels are visible. The overall scene is set against a dark blue background with some light streaks, suggesting a high-speed journey.

On the dark side of Gliese 581g . . .

- But there's *still* a catch: At least 530 times as much mass in fuel as in the ship and cargo itself.
- Imagine sending the international space station (m= 370 metric tons) to Gliese 581g.
- The whole trip would require something like: $E = 1.8 \times 10^{25}$ Joules
- Thus, if the entire surface of Earth were covered with solar panels it would take 3 million years to collect needed energy.
- That, as physicists say, is non-trivial.



But the biggest danger is the hope of finding a “spare Earth”.

- NBC’s Brian Williams: “They say it’s about 20 light years away, but that’s practically nothing in astronomy terms. It’s just nice to know that if we screw this place up badly enough there is some place we can all go.”



After some three billion years of life’s coevolution on this planet, the likelihood of finding a second home as finely tuned to life as is Planet Earth is vanishingly small!

So, let's get to work on the BEST space ambassador!

