

Observational Practice Problem

It turns out that there ***are*** aliens on Comet 3i/ATLAS and they've been trying to contact us! The aliens have cell phones and are trying to call. Unfortunately, their technology is not the newest, and are sending a signal at a frequency of 850MHz. Suppose the aliens are trying to signal us while at their perihelion distance of 1.35AU, Earth at opposition.

- a. What is the radio beam size if observed by 10m telescope?

Luckily, the aliens can use the entire comet (estimated 3km in diameter) as the cell phone!

- b. What is the source solid angle?
- c. What is the intensity of the source if we measure an antenna temperature of 85K?
- d. Does this seem reasonable for the aliens to have created that signal?