The Universe of Planet Ziggy

Assignments 4, 5 and 6 for ASTR1002.

Second Data Set.

The Story Continues.

- You have now been on Ziggy for a week.
- The Xenobiologists have identified a new carniverous species: they look rather like Koalas, but drop from the “trees” on top of other animal’s heads and then devour them.
- Much progress has also been made in the astrophysics section.
- Ziggy’s sun has still not risen, but Ziggy’s moon has set, making it much easier to see faint things in the sky.
- There does not appear to be a Milky Way in Ziggy’s sky.
- Instead, you see a huge fuzzy ball, covering a quarter of the sky, which you are calling the “Milk Stain”.

The Milk Stain.

Telescope View

- You have now dismantled some of the USS Drongo's telescopes and set them up outside (protected by an electric fence from the sabre-toothed bunnies).
- When you look anywhere in the sky you see vast numbers of stars.
- But when you look at any part of the Milkstain, you see vast numbers of stars packed close together.
- You do not see any general glow - just the light of countless stars.

Telescope view of part of the Milkstain.

Telescope view of another part of the sky.

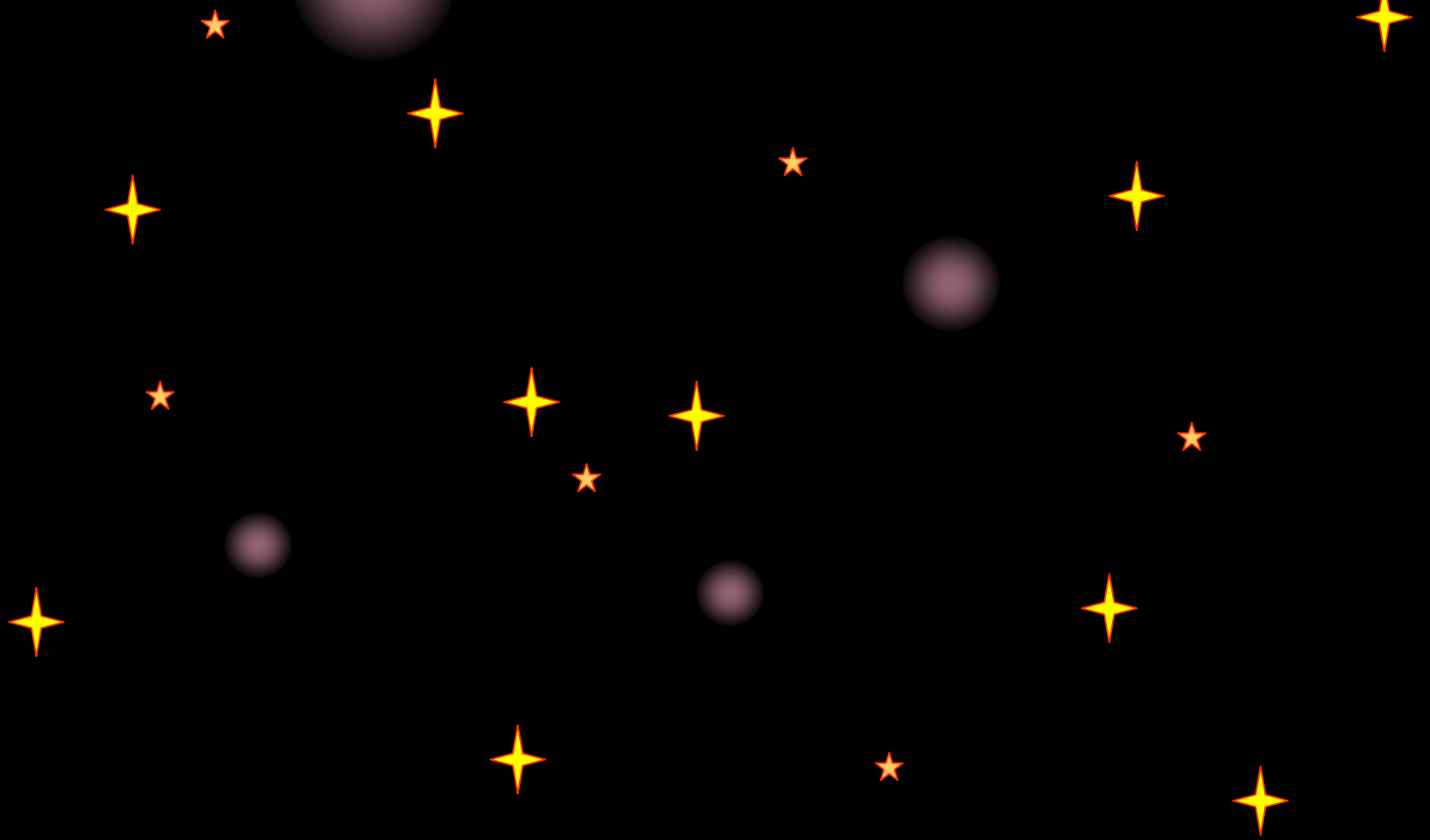
A Pulsing Star

- While observing one of the central regions of the Milkstain, you found several stars that seem to pulse in brightness. They take four hours to do each pulse.
- You remember seeing several similar star slast year, while exploring in the Canopus region. These stars also pulsed every four hours.
- Your telescope picks up around one photon per second from each of these stars.
- When you observed last year's stars with the same telescope (from a distance of one parsec), you detected around 100 million photons per second.

The Fuzzballs

- While scanning the sky (away from the Milkstain) with your most powerful telescope, you kept coming across small fuzzy objects, which you are calling “fuzzballs”.
- They seem to be scattered pretty randomly across the whole sky.
- Some are bigger and brighter than others.

Some Fuzzballs.

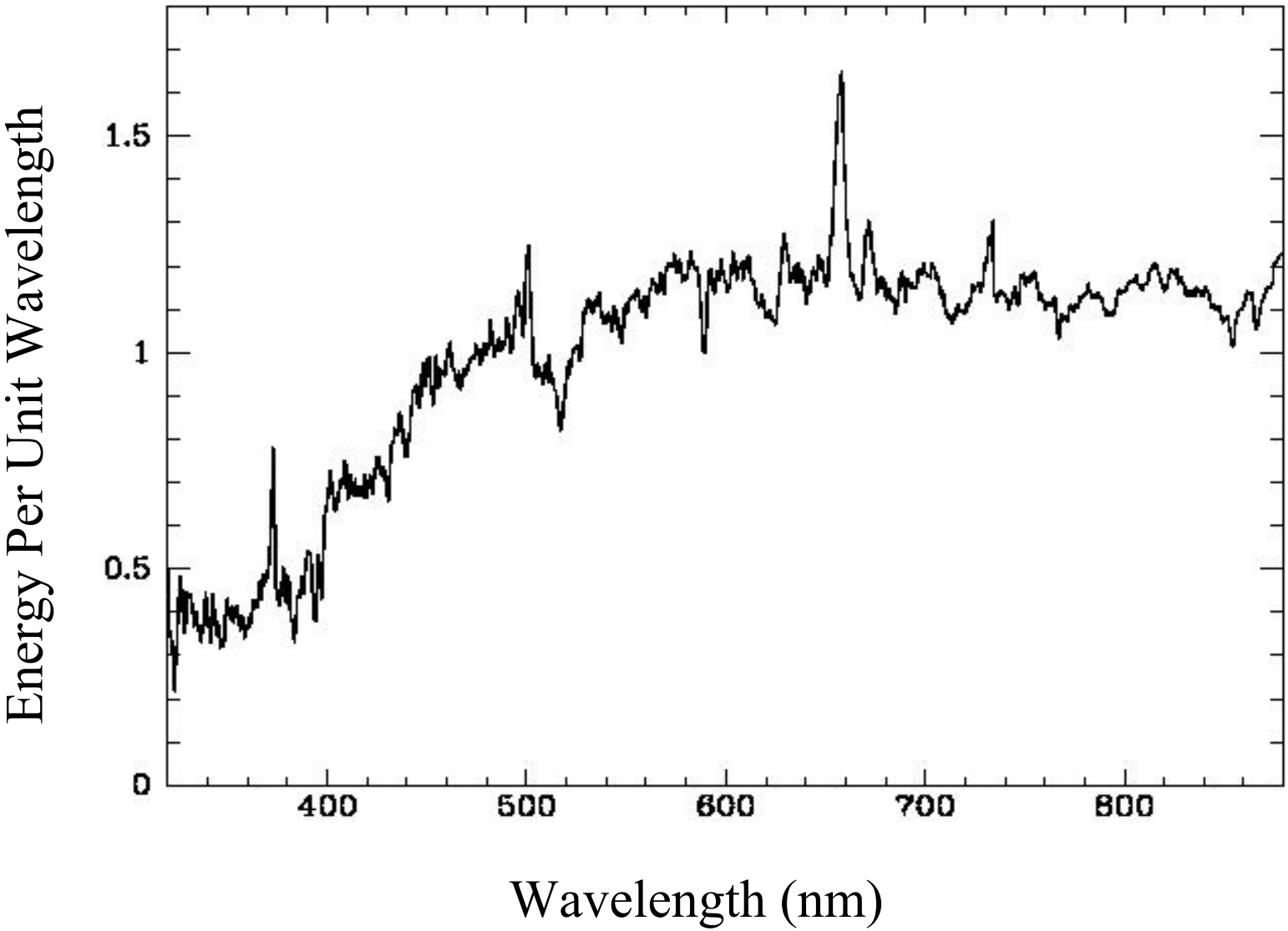


Fuzzball Spectra.

- You used your best telescope to look in detail at the biggest brightest fuzzball.
- You also obtained a spectrum of it.

Image of the Brightest Fuzzball

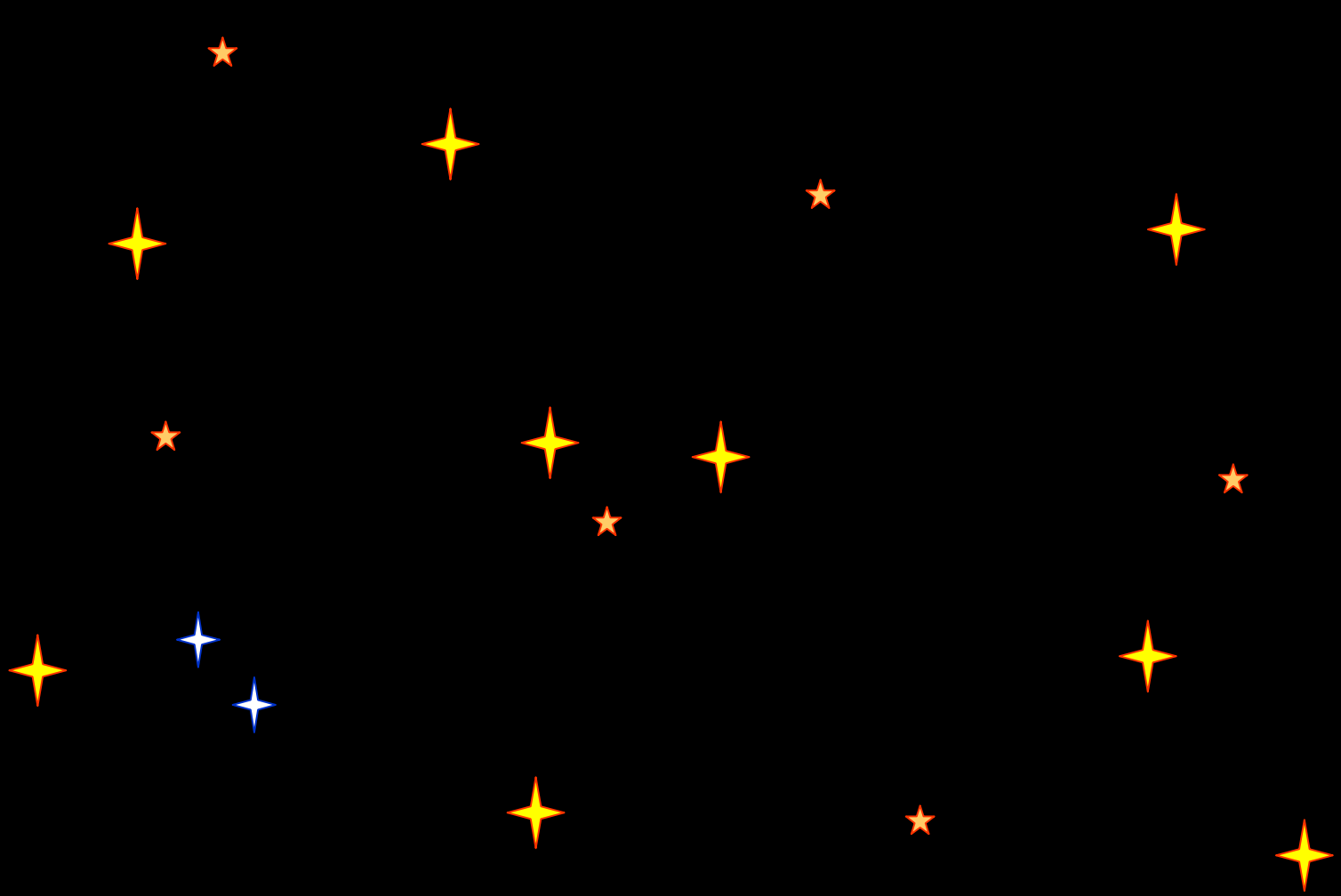
Spectrum of the Nearest Fuzzball



A Wandering Star

- Another curious fact:
- Most of the stars you see have continued doing circles around the zenith.
- But two stars were recently spotted which appear to be doing something rather different…

Initial View.



Same view one hour later

Same view another hour later

What can you deduce?

- Once again, Captain Howard would like to hear what you've learned about the universe into which the alien wormhole flung you, and Ziggy's place in this universe.