Explain Ionizing Photons:

Explain that ionizing photons are photons with energy levels high enough to knock electrons off of hydrogen atoms. Essentially the hydrogen becomes positive because it loses its negative electron and becomes just a proton.

Explain Reionization:

Reionization is when the neutral hydrogen between galaxies becomes ionized by ionizing photons. It’s considered “re” ionized because scientists know that at one point the galaxy was just delocalized protons, neutrons and electrons. Understanding reionization is interesting to use because its when the universe really starts to produce its first light going from cloudy neutral hydrogen state to a clearer state where you can more easily see light.

The Timeline of Reionization:

What scientists don’t understand about reionization is its timeline. This is because the ionizing photons that would’ve been responsible for reionization were absorbed in the intergalactic medium that was present when the universe was cloudy and made of mostly neutral hydrogen.

High redshift galaxies:

Until now the same high redshift star-forming galaxies that would’ve been responsible for the start of reionization would have been unobservable but now with JWST we can see these galaxies.

Have one slide for one idea. I.e. one slide for ionizing photons. Having a descriptive title. Could take a screenshot of the images in DS9. Open up the science image, model, residual ← Showing all the different things.

Ionizing Emissivity:

What me and my mentor are interested in is ionizing emissivity. We want to understand the rate at which these ionizing photons were produced that made the universe go from cloudy to clear.

The Three Parameters: There are technically three parameters that influence reionization. The fraction of ions that can escape a galaxy, the production efficiency of ionizing light for that galaxy, and the star formation ration of that galaxy which are the three parameters you see on the board.

Compact Galaxies:

Compact galaxies are interesting to us as they are thought to have high escape fractions for their production of reionization. They are interesting to us because we want to know if at all this smaller size is responsible for the production of ionizing photons in the early universe’s history by high-redshift galaxies

The Research Question:

This all ultimately leads to the research question that me and my mentor have at hand which is understanding whether or not the sizes of these compact v.s. expanded galaxies are at all producing more of the ionizing photons that made our universe clear.