Name: _____ Date: _____

Dark Energy Explorers (DEE):

Data Analyzing

We are on the hunt for distant galaxies to measure Dark Energy for the Hobby-Eberly Telescope Dark Energy Experiment (HETDEX). In our local universe, Dark Energy is the term astronomers use to explain the mysterious phenomenon of why galaxies expand away from each other at an accelerating rate.

Directions:

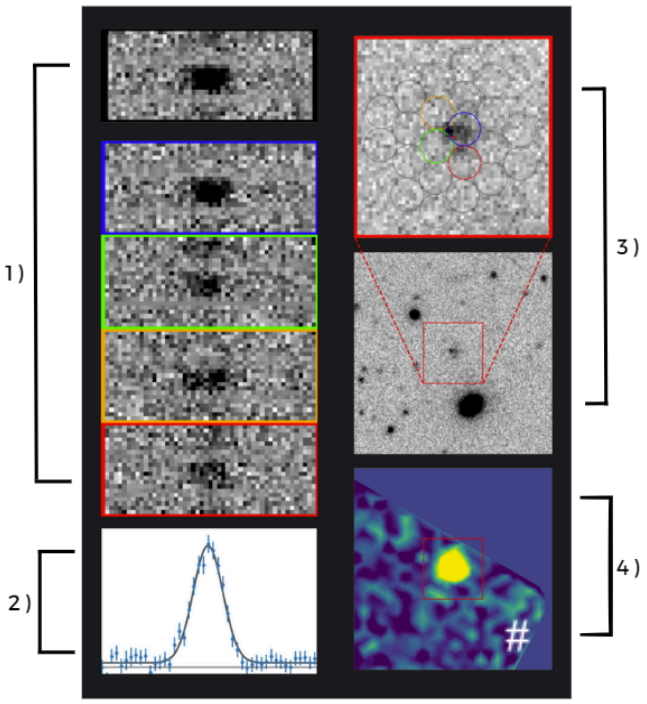
- In groups of 2-3 individuals, you will be classifying Zooniverse images.
- Identify each image by using the guide below, then place either with the "#Throwback" or "#Keepthisgalaxy" category label.
- As you identify the galaxies, fill in this worksheet. Be ready to discuss and justify your answers with your classmates.
- Characteristics in italics are the technical descriptions we use, while the characteristics in parentheses are what we (and you!) are looking for in the telescope images

Characteristics to #KeepThisGalaxy:

1) *Dark circle-like shapes in pixels show a strong emission line* (black dots in at least two color-outlined boxes, top left image is a combined sum of all colored boxes)
2) *Good spectral line fit* (blue dots and error bars aligning with the bold black line curve)
3) *Galaxy in the middle of the images* (dark spots in both galaxy images, the top is a zoomed in version of the bottom)
4) *Good quality observation* (bright yellow circle-like shape within the middle of the image)

➔ **If you see 3 out of the four characteristics, then your classification should go in the Keep this Galaxy' category!**

➔ **If you DO NOT see these characteristics it is bad data to 'Throwback'**



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Check out this GIF for more examples of galaxies to keep and this GIF of galaxy examples to throwback!

Choose two images you classified. Write the image number of each classification and a reason *why* you classified it the way you or your team did. List specific characteristics, or descriptions of the images to justify your classification.

Image # :	**Image # :**

Did you disagree with any of your peers? If so, what numbered image and what was the conflict?

Interesting things I noticed…

Optional: Do you have any questions you'd like to ask the astronomy research team?