Launch Milky Way – Star Color

Don't forget to record data and observations as you work through this activity. All of the questions and reminders from the activity are listed in order below.

- Describe the differences you observe between the image of the sky as seen from a dark site and the one of the three stars recorded by the SDSS telescope.

  The image of the sky as seen from a dark site is uniform, whereas the one recorded by the SDSS telescope is very clear with the color differences.

- List some reasons these two images appear so different.

  Telescope, visibility, light gathering power, location

- Record the coordinates for your starting place.

      RA – 2.10
      Dec - 29.09

- In the Look for Patterns section of this activity, you should notice some patterns related to how the magnitude scale itself is organized and between the magnitude measurements in different filters and the colors you observe. Explain your observations with evidence. If you are able, cut and paste image examples that support your observations.

  The magnitude scale is organized such that the lower the number, the higher the brightness. For every decrease in 5 of the magnitude, the luminosity increases by a factor of 100. A lower magnitude in one area suggests a higher color in another area.

- Color. In this section you build an understanding of the difference between what we **see** as the color of a star and what is **measured** as magnitude through the each of the SDSS filters. We are not able to describe a star's color using magnitude measurement alone. Give an example.

  Magnitude just measures how bright a star is, but how bright a star is does not necessarily describe its color. It could be very red and bright or very blue and bright.

- From the information provided in the Color section, write a definition of color in astronomy.

  The difference between the magnitudes of two filters.

- Explore Color Calculations. Record the method you used to explore the relationship between the observed color of stars and their calculated value for color. What tools did you use? How did you use them? What data did you gather? What improvements did you make to your methods as you developed your procedures? Did you run into any problems? You can report them HERE.

  I used the skyserver notebook tool to to do this. Using the values of the filters I calculated the value for the color.

- Report your data here, screen capture images or link to another file.

objid	type	ra	dec	u	g	r	i	z	redshift			
1237648720693755918	GALAXY	179.689293	-0.454379	19.10	17.60	16.83	16.44	16.14	0.09	Explore	Navigate	Delete
1237648720693755949	STAR	179.718189	-0.456744	15.51	13.51	12.88	12.69	13.76	-	Explore	Navigate	Delete
1237648720693756154	STAR	179.713207	-0.484211	20.09	17.28	15.79	14.31	13.50	-	Explore	Navigate	Delete
1237648721230496029	GALAXY	179.502434	-0.205820	18.58	16.70	15.74	15.31	14.95	0.11	Explore	Navigate	Delete
1237648721230561335	STAR	179.595740	-0.203825	16.25	11.10	10.18	9.82	9.93	-	Explore	Navigate	Delete
1237674649928532220	GALAXY	179.675311	-0.214218	17.97	16.57	15.89	15.51	15.24	0.09	Explore	Navigate	Delete
1237674649928532229	GALAXY	179.675034	-0.278976	20.84	19.11	17.93	17.46	17.14	-	Explore	Navigate	Delete

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  Color is calculated through the use of different filters and subtracting them. It does not depend on the brightness of the star; rather, it depends on the differences in magnitude of the different filters. The color of the star can give astronomers different information about the star, making it useful to accurately calculate color this way.

- What new questions could you ask about astronomical objects now that you have color to use as a tool for exploring?

  If I look at an object in the night sky, could I predict its color?
  How does color correlate with distance?