RGB composite of Astronomical Imaging and Solar System Object Identification

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RGB composite imaging is important when studying astronomical images. This was done using DS9 which allowed us to reduce unwanted data by changing parameters of the image with the software. Using a red, green and blue data set we are able to combine these data sets to create a composite which will showcase different aspects of our composite in a clear image. Another technique to reduce data and produce a composite is by correcting an image for the bias, dark and flats within the data set. Without correcting for these the composite will not produce the result we are expecting to find. Using corrections, we are able to see objects within our solar system that are moving through various composites.

M64 RGB Composite with DS9 Data Reduction

Introduction

RGB composites are used to study astronomical objects after collection of data has been complete. Within these RGB composites regions of interest will form during the process of the creation of the composite. These regions are then examined and compared to previously studied astronomical objects to determine what is found within the region of interest.

Methods

To create an RGB composite image using DS9, you will have to import different sets of data under different frames. It is important to first look at each individual set of data to understand what you are looking at and how the sets of data will be used to create the composite. Next is reducing each set of data to create a clear image. This will take changing the scale of the set of data as well as the zoom percentage. Each set of data will require its own parameters to create a clear image. As each set of data is being added to the composite, it is important to make sure that no one set of data is overbearing the rest of the sets of data. Once your composite image is ready for further reviewing you will be able to start seeing different regions of interest within the composite.

Results

When looking at the composite image 3 regions of interest emerged. The first is within the smallest circled region. This region is the centre of the astronomical object formed in the composite. This region was heavily influenced by the R and B component of the composite. The R component of the composite when reviewed had a strong bright spot at the place of the centre of the composite. The B component had a strong bright spot which extended past the smallest region. When combined the centre of the smallest region created a region of interest as it was the peak of intensity. The second region of interest is within the middle-sized region on the composite region. This region was influenced by all 3 composites. The B component of data had the heaviest influence on the region when the 3 regions were individually examined and reviewed. However, both the R and G components of the data did strengthen the region of interest and helped form its distinct shape. The third region of interest falls within the largest circle on the composite. This region was heavily influenced by the B and G components of the data.

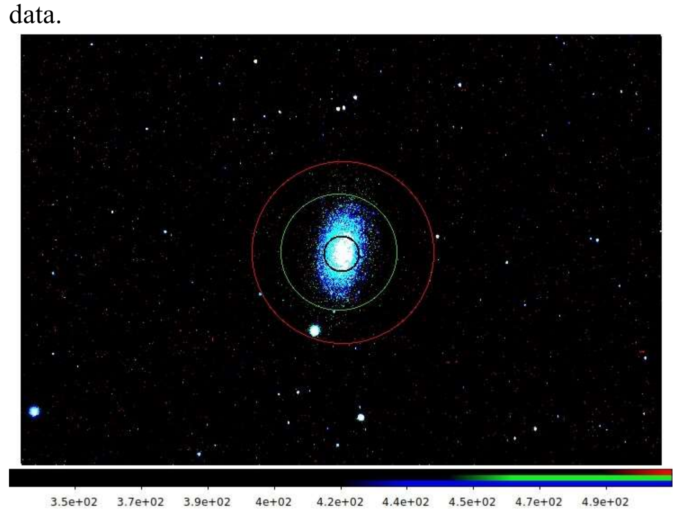

Figure 1. RGB composite with 3 regions of interest. The first region of interest was falls within the black circle in the middle of the composite. The second region of interest falls within the green circle of the composite. The third region falls within the red large circle on the composite.

Discussion

Within Fig. 1, you will the formation of the galaxy M64 (Black Eye Galaxy). Within the figure above you will see 3 different circle which create the 3 regions of interest. The first region of interest is the smallest circle which has been coloured black refer to the centre of the astronomical object within the composite. The second region of interest is the middle circle which forms a disk for the galaxy. The third region of interest is the large circle which shows the outer

Conclusions

The composite produced using DS9 formed the M64 galaxy. The R set of data showed a strong presence of the centre of the galaxy. The B component showed a strong presence of the disk of the galaxy. The G component of data showed a strong presence of the outer cloud of stars within the galaxy.

DS9 and Python Yale La Silla-QUEST Data Analyses

Introduction

The introduction should briefly establish the context of the work being reported. You can do this by discussing the historical background. Make sure to include references to the original research articles rather than textbook or websites where possible.

State the purpose of the work in the form of the problem you have investigated. Summarize relevant experimental background to provide context, key terms, and concepts so your reader can understand the experiment. Citations should appear as superscripts after the appropriate word[1] or statement, in which case, placed at the end of a sentence after the fullstop.[2-4] (main Body of text Times New Roman, 11pt).

Methods

Briefly explain what you have coded, and how you dealt with any issues. Include details of any qualitative analyses and/or statistical procedures used to determine your results (if pertinent). Use past tense to describe what *you did*.

Results

The function of the Results section is to objectively present your key results, without interpretation, in an orderly and logical sequence using both text and illustrative materials (Tables and Figures). Write the text of the Results section concisely and objectively. You may have to use the passive voice to avoid the use of 'I'; however, you should use the active voice as much as possible. Use the past tense. Avoid repetition; you should to refer back to what you have already stated. You do not get extra marks for length. In fact you will be graded higher for conciseness, as long as what you are saying is clear.

Again, it is important not to interpret the data here. The transition into interpretive language can be a slippery slope.

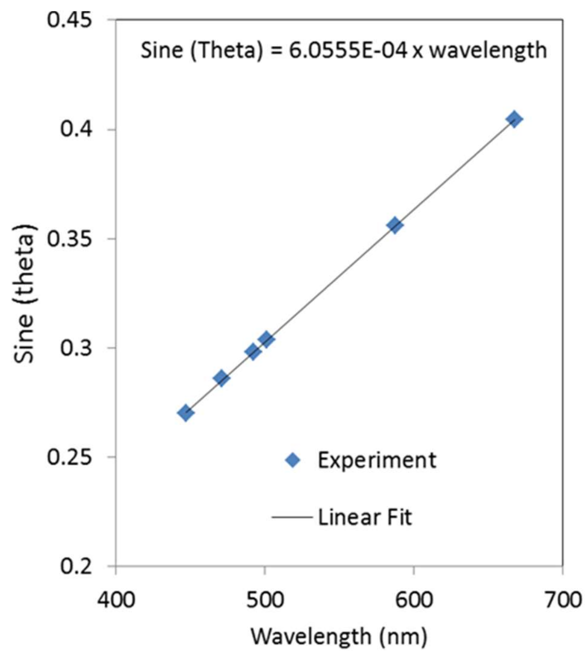

Figure 2. Sin (theta) vs wavelength for the spectral lines of Helium. Right click on figure and select insert caption. Caption should appear below figure. (10pt Times New Roman)

Fig. 1 is an example figure. Figures must be 8.6 cm in width, which is the template width of the columns. Insert the figure in-line with the text. The axis labels, numbers and text within the figures must be clearly readable. Only show the data necessary for the discussion of the paper and only show representative data where appropriate. Think very carefully about how you plan to present your data.

Discussion

If your output requires additional discussion (not necessarily relevant for all parts of the coding), then describe the patterns, principles and features your results show. Explain how your results relate to expectations and to the literature cited in your

Introduction. Explain plausibly any agreements, contradictions, or exceptions. Describe what additional research might resolve contradictions or explain exceptions. Make explanations complete. Give evidence for each conclusion. Discuss possible reasons for expected and unexpected findings. Remember to cite all statements.[5]

Conclusions

This should be a short and concise description of your conclusions from the experiment.

References

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2. "Some appropriate book title" A. Wryter, pages 45-50, Publisher (City) 2012
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5. J.R. Hartley "Include at least five citations of mainly original work" Applied Physics Letters **32** 4590 (2010)