NIR Image Reduction of NICFPS APO Data of SACS X-Ray Detected Galaxy Clusters

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What is a Galaxy Cluster?

- A structure that has hundred to thousands of galaxies that are together through gravity that have the mass of around 10^14 solar masses.
- Mostly made up of dark matter, hot gases, and stars/galaxies.

https://www.universetoday.com/30522/galaxy-cluster/

Why do we care about Galaxy Clusters?

- Learn about how the galaxy cluster formation
- To learn more about galaxy formation, and evolution
- Find out more about dark matter.

Where are we getting this data from?

- Apache Point Observatory
- APR (Astrophysical Research Consortium) a 3.5 meter telescope
- The telescope uses a NICFPS.
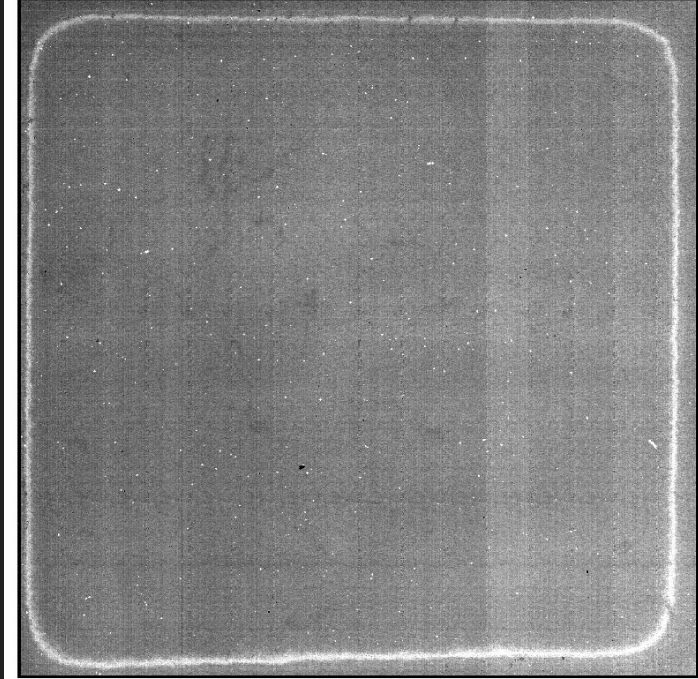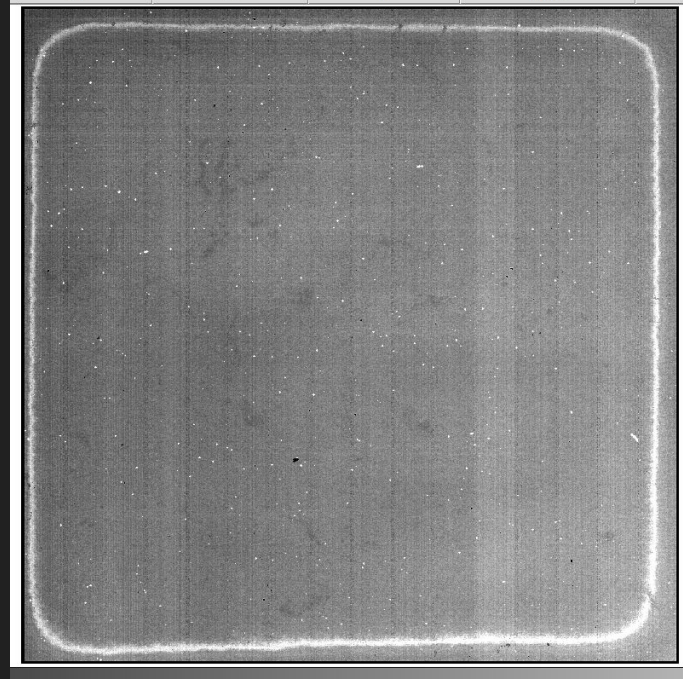- NICFPS is a near infrared camera and Fabry Perot Spectrometer.

https://www.apo.nmsu.edu/

What are we doing with these images?

- IRAF = General Image Reduction and Analysis
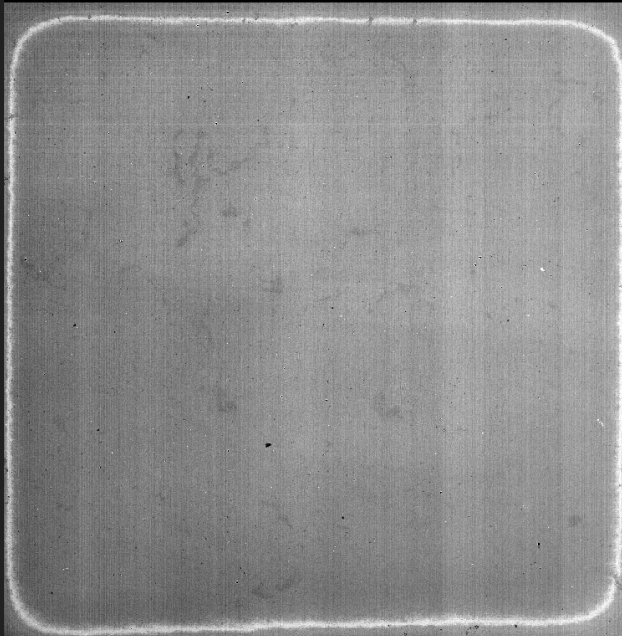- Dark frames

Before dark combine

After dark combine

What are we doing with these images continued

- Flat images/flat combine
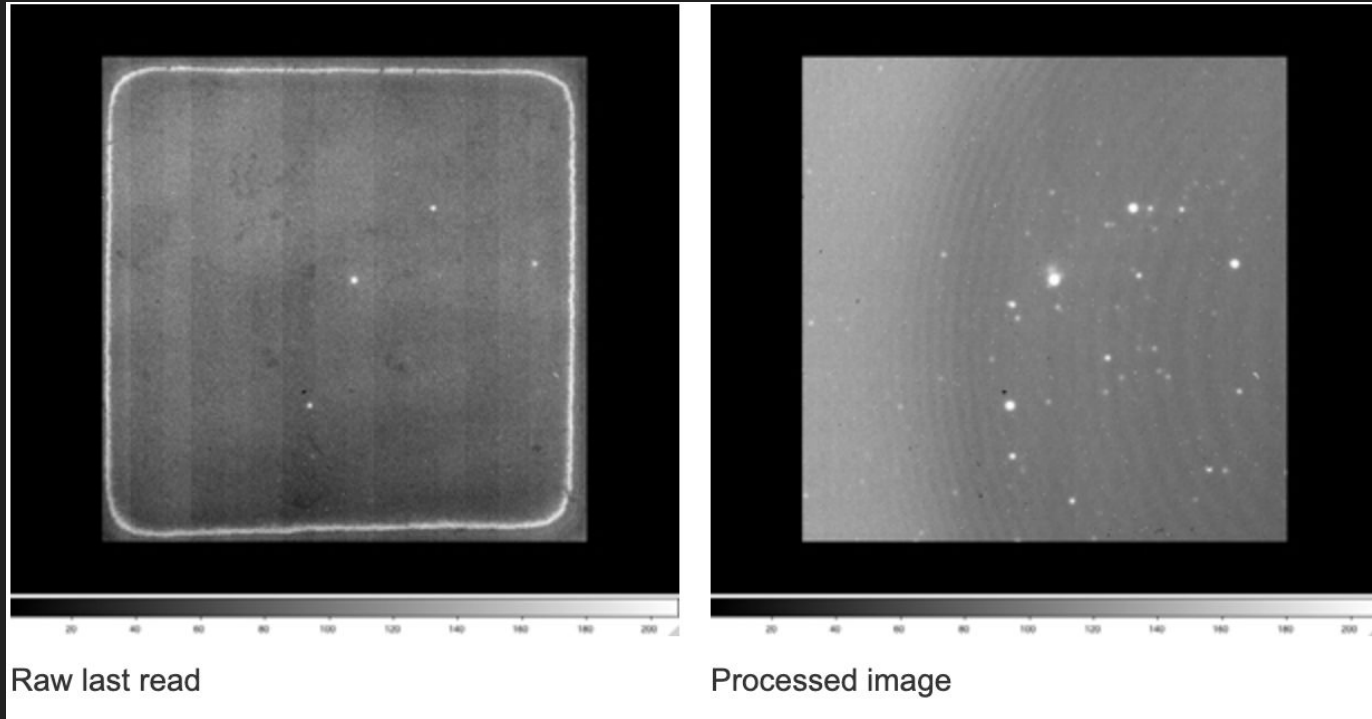   - Remove the dark shadows caused by dust motes

Before
flat
combine

After flat
combine

What we want in our end product

Raw last read

Processed image

https://www.apo.nmsu.edu/arc35m/Instruments/NICFPS/

Reference Page

https://www.apo.nmsu.edu/arc35m/Instruments/NICFPS/

https://iraf-community.github.io/doc/beguide.pdf

https://www.apo.nmsu.edu/

https://www.universetoday.com/30522/galaxy-cluster/