

# Astroschool: Basic Image Processing Workflow for one shot color images



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# Where did we leave off?

## Image Calibration:

Correcting your raw images for dark current, BIAS signal, and uneven illumination

Then register your images and stack them. The result is a “master frame” for each channel/filter (or one color master frame).

**What does a master frame look like?**

The background of the slide is a deep black space filled with a vast field of stars. The stars vary in brightness and color, with many appearing as small white or blue pinpoints of light. Several stars are significantly brighter and larger than the others, each exhibiting prominent four-pointed diffraction spikes. These bright stars are scattered across the frame, with one particularly large bright star in the lower-left quadrant and another in the lower-right quadrant. The overall effect is that of a rich, multi-colored stellar population.

# What can/should you do while your data is linear?

- Screen Transfer Function (STF)
  - Crop
  - Gradient extraction
- Background neutralization
  - Color calibration
  - Noise reduction
- Deconvolution/sharpening
- Histogram transformation (stretch to non-linear)



# Stretching

Stretching is a process by which you change the black point and the mid point, so as to bring out the fine details in your image.

# Non-linear processing

Steps you can/should take *after* stretching your data:

- More noise reduction
  - HDR Wavelets
  - Color saturation
- Bring out faint structures (several tools in PI)
  - More noise reduction
  - Green removal (SCNR)
    - Export for web

# Image processing links

Ron Wodaski's book:

<http://www.newastro.com>

Lessons from the Masters (Rob Gendler, ed.):

<http://tinyurl.com/o6esqsk>

Warren Keller's tutorials:

<http://www.ip4ap.com>

Harry Page's PI tutorials:

<http://www.harrysastroshed.com/pixinsight/pixinsight%20video%20html/Pixinsighthome.html>

JKMorse's PixInsight cribsheet:

<http://pixinsight.com/forum/index.php?topic=6823.msg46218#msg46218>