

# The Preparation of Presentation-Quality Astronomical Images

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The quality of modern astronomical data, the power of modern computers and the agility of current image-processing software enable the creation of high-quality images in a purely digital form. The combination of these technological advancements has created a new ability to make color astronomical images. And in many ways it has led to a new philosophy towards how to create them. A practical guide is presented on how to generate astronomical images from research data with powerful image-processing programs. These programs use a layering metaphor that allows for an unlimited number of astronomical datasets to be combined in any desired color scheme, creating an immense parameter space to be explored using an iterative approach. Several examples of image creation from Gemini Observatory and NOAO telescopes will be presented.

A philosophy is also presented on how to use color and composition to create images that simultaneously highlight scientific detail and are aesthetically appealing. This philosophy is necessary because most datasets do not correspond to the wavelength range of sensitivity of the human eye. The use of visual grammar, defined as the elements which affect the interpretation of an image, can maximize the richness and detail in an image while maintaining scientific accuracy. By properly using visual grammar, one can imply qualities that a two-dimensional image intrinsically cannot show, such as depth, motion and energy. In addition, composition can be used to engage viewers and keep them interested for a longer period of time. The use of these techniques can result in a striking image that will effectively convey the science within the image, to scientists and to the public.