

2007 Advanced Imaging Conference

October 26- 28, 2007

DoubleTree Hotel
San Jose, California

Agenda

Friday, October 26

8:00am - 9:00am:	Conference check-in for all sessions
9:00am:	Doors Open
10:00am - 12:00pm:	Image Processing Workshop- Morning session
Adam Block Caelum Observatory	
<p>Adam's Friday workshop will cover using programs such as CCDStack, Maxim DL, and Mira to display (stretch), calibrate and register data. Having shown these topics, Adam will spend additional time on the general idea behind rejection algorithms and understanding how to use them when combining data. Later in the afternoon he will switch gears and show how to use both common (and a few uncommon) techniques of manipulating the contrast in our images. This takes place in Photoshop employing layers, masks and high pass filtering in both global and selective (local) applications. The emphasis and de-emphasis of brightness and color in images is a powerful way to bring attention an object's most fascinating features.</p> <p>Use of a personal computer is not required for this session. CCDStack and Maxim DL are now available for trial use prior to the conference. Both data and a few tutorial-like recordings are also available so that everyone can be up to speed on basic topics. Like a cooking show, Adam will be going through exercises on the computer at "presentation speed" with input and direction from participants.</p>	
12:00pm - 1:00pm:	Lunch <i>(included with registration)</i>
1:00pm - 3:00pm:	Image Processing Workshop- Afternoon session
3:00pm - 9:00pm:	Vendor visits and networking
4:00pm – 6:00pm:	Cash bar reception
7:00 pm- 8:00pm:	Conference check-in for Weekend Sessions

Saturday, October 27

8:00am - 8:30am: Conference check-in for Weekend Sessions

8:30am - 8:45am: Opening remarks

Steve Mandel

AIC Chairperson and Conference Host

8:45am - 9:30am: The 2007 Hubble Award

Each year, the AIC honors an individual who has produced outstanding achievements advancing the art and science of astronomical imaging. Nominations are submitted by individual AIC team members and the final selection is made by the full board. The recipient receives a small cash award, trophy and an invitation to deliver the Hubble Lecture at the annual conference. This is the award's second year and we are honored to present it to Dr. Robert Gendler for his many valuable previous and ongoing contributions.

Dr. Robert Gendler
2007 AIC Hubble Award Recipient

The 2007 AIC Hubble Award Lecture:

Mountains from Molehills: Planning, Executing and Completing the Mega-image Project

Large mosaic projects can be daunting and discourage even the most ambitious and experienced imagers. Yet these projects offer the photographer an opportunity to create a very special and unique picture that can be printed in very large formats that are often sought out by book and magazine publishers.

The *2007 Hubble Lecture* will cover each phase of the planning, execution, and processing of large image scale wide field projects that Rob refers to as *mega-images*. Rob will explain how to create user friendly planning charts that are useful not only for planning mosaics but for planning any imaging project using three commonly owned programs (The Sky, Registrar, and Photoshop). Finally the current techniques for creating multi-frame mosaics will be explained. These methods simplify the overall process and eliminate introduction of both distortion and rotation- two situations that often make these projects challenging.

9:30am - 10:15am: Featured Presentation

Don Goldman

What You Always Wanted to Know About Narrowband Filters but Were Afraid to Ask

Don will provide an overview of narrowband filters. His talk will include a definition of terms used to describe them, such as out-of-band blocking, S/N, FWHM and others. In addition he will discuss issues with using these filters, like transmission windows shifting to lower wavelengths with faster optics (depending upon transmission width, or FWHM) for a given optical system, and other issues effecting narrowband imagers.

Narrower filters are more difficult to manufacture consistently both in their center wavelengths and peak transmissions. Narrower filters will reduce the sky background for those living in light polluted environments and produce higher S/N in comparison to wider filters ONLY if the peak transmissions are comparable. How narrow of a filter does one need? These interrelated issues will be discussed.

10:15am - 10:45am: Break

10:45am - 12:00pm: Panel Discussion

Neil Fleming and Steve Cannistra

Narrow Band Imaging

Both Neil Fleming and Steve Cannistra are experienced imagers who have used narrowband techniques to overcome light pollution at their imaging sites. Neil will discuss the processing behind narrowband imaging, from initial data assessment through techniques utilized to optimize the clarity and presentation of the final images.

Steve will discuss novel techniques that permit the use of only two narrowband filters to generate an emission line image. After describing the rationale and processing methods for the bicolor technique, he will demonstrate the technique using several images obtained from emission line (as well as broadband) data, comparing the results to more conventional processing using the Hubble or CFHT palettes. Both imagers will share thoughts about a variety of narrowband processing techniques, including; color balancing of emission line images, avoidance of clipping, and the handling of star colors.

12:00pm - 1:00pm:

Lunch (*included with registration*)

1:00pm - 1:30pm:

Founding Sponsors Corner

Michael Barber, SBIG

Stephen Bisque, Software Bisque

Brad Ehrhorn, RC Optical Systems

This conference would have never started without the generous support of our founding sponsors. They provided the funding and other support so we could have this get-together- one that is open to all CCD equipment and software vendors and enthusiasts. Each Founding Sponsor will have 10 minutes to update us on the newest products they have to offer. A big thank you goes to SBIG, Software Bisque and RCOS for their initial, and ongoing, support.

1:30pm - 2:15pm:

Featured Presentation

Dr. Mike Bolte,

Director- University of California Observatories

Shooting with the Big Boys

Michael Bolte received his undergraduate degree in Physics from the University of Central Florida, Master of Science Degree in Physics from Florida State University and PhD in Astronomy and Astrophysics from the University of Washington in 1987. After a postdoctoral position at the Dominion Astrophysical Observatory in Victoria, BC, he was awarded one of the first of the prestigious NASA Hubble Fellowships. In 1993, he joined the faculty of the University of California, Santa Cruz with a joint appointment in the Astronomy and Physics Department and UCO faculty. He has chaired the W.M. Keck Observatory Science Steering Committee, the California Extremely Large Telescope Project Steering Committee and the Thirty-Meter Telescope Science Advisory Committee. He is currently a member of the CARA Board of Directors overseeing the W.M. Keck Observatory and the Thirty-Meter Telescope Board of Directors. In 2006 he was appointed Director of the University of California Observatories.

His research areas are observational tests of stellar evolution, determinations of the age of the Universe, the origin of the chemical elements and chemical evolution since the Big Bang, and the nature of the first stars to form after the Big Bang.

Mike's story begins with the legendary visual observations of Bernard and is continuing the use and evolution of direct observations with the Lick and Keck telescopes. This story starts with the adaptive optics-based very high-spatial resolution imaging with the Keck 10m telescopes. In addition, he will discuss the current capabilities and plans for future capabilities at the Lick and Keck Observatories. They will be described along with recent results based on observations from these observatories. The status and promise of the Thirty-Meter Telescope project that will be nearing Preliminary Design phase will also be presented.

2:15 - 2:45:

Break

2:45pm - 3:30pm:
Daniel Verschate

Featured Presentation

Imaging from the Southern Hemisphere

The presentation will focus on the main questions that northern hemisphere imagers pose themselves when they start considering doing some work "down under".

First we'll talk about the reasons to image in the southern hemisphere: what's so different and what stays the same. The next and maybe most important topic is the site location: where to image from. We shall also focus on the possible ways: either by traveling to the site or by remote imaging techniques. Object selection is not so easy once you go past the famous southern highlights: we'll talk about ways and sources to find interesting targets. Finally the talk will inform about present and future southern hemisphere astrophotography offerings and about which people or organizations to contact. The above topics will be interspersed with the speaker's own experiences and a sample set of southern hemisphere astroimages.

3:30pm - 4:15pm:
Chris Schur

Featured Presentation

Enhanced Hydrogen-alpha Galaxy Imaging

This presentation will discuss a fresh technique for enhancing the hydrogen-alpha gas distribution in extragalactic nebula, primarily local group and nearby systems. He will discuss why this enhancement allows us to more clearly demonstrate the dynamic processes occurring in spiral galaxies. Step by step, he will show how to perform the enhancements while retaining a crisp G2V color balance. Finally, he will muse over the ethics of such enhancements and how to properly present such images to the scientific community.

Processing techniques discussed will cover separation of the hydrogen-alpha nebulosity from the residual luminance in the H-alpha band, combining the isolated hydrogen detail back into the R, G, and B channels such that the G2V color balance is not affected. The combination technique will also recover the correct hydrogen coloration by summing into each color channel with a sum ratio equal to the average H-alpha, OIII and H-beta abundances for common nebulae.

4:15pm - 4:35pm:
Keith Allred
Bill McLaughlin

Featured presentation

Performance Breaking Observatories That Didn't Break the Bank

The Optical Remote Imaging Observatory of New Mexico (ORION) is a joint project between Keith Allred, Peter Finnoff, Bill McLaughlin and Jay Potts. Located high in the Sacramento Mountains of south-central New Mexico, ORION's complex of four separate observatories incorporated leading-edge design to improve performance along with innovative construction techniques that maintained the project's affordability. This presentation will explain the project's design goals, describe how the facilities were built and discuss several unique cost saving measures adopted by the owners.

4:35pm - 6:00pm:

Reception in vendor area

6:00pm: - 7:00pm:

Dinner *(included with registration)*

7:00pm - 9:00pm:

Vendor demos (in main conference room)
Live Remote Imaging with a 24" RCOS
(from New Mexico Skies, weather permitting)

Sunday, October 28

8:30am - 9:15am:

Featured presentation

Ken Crawford

Depth of Field Processing

A big challenge of processing images of the deep sky is that we convert 3D space into a 2D image. This creates flat images that can lack depth and contrast. Also, given the fact that our images are always blurred to some extent, digging out the fine details can be difficult at best. Uses of different stretching methods to show the bright details, as well as the faint ones, also lends to the flatness of an image by "normalizing" the dynamic range of the object.

Ken will demonstrate methods that selectively sharpen and smooth areas of the image to not only bring out details but also provide depth to an image. Also using selective brightening in color and contrast on the foreground parts of objects blended in with layer masks with complete control of what you want to enhance. The goal is to transform a flat looking image into one that has more 3D effect. Ken calls this "Depth of Field" processing.

9:15am - 10:30am:

Last chance to visit vendor booths!

10:30am - 11:15am:

Featured presentation

R. Jay GaBany

Color Filtering

Color has traditionally been limited to tinting images but it can also contain a surprising amount of information that can be used to filter structures hidden in pictures. Combining this process with layered contrast stretching results in even greater torque. Unbinned color information is the most effective source for color filtering but this can result in pale or noisy hues. So, five different techniques will be examined that can produce well saturated, low-noise colors for tinting images- examples will demonstrate each of these approaches, some of which are new.

11:15am - 12:00am:

Door Prizes *(You must be present to win.)*
Conference Wrap-up

12:00pm:

Conference Ends