

Summary of the Astronomy Workshop at Gravic Saturday, October 8, 2011

Prepared by Bruce Holenstein (bholenstein@gravic.com)

Saturday, October 8, 2011, several astronomers and area researchers met at Gravic's offices in Malvern, PA for a workshop on astronomy and solar power topics.



Participants

Victor Berutti, Buddy Borders, Steve Conard, Don D'Egidio, Ed Deviney, David Dunham, Joan Dunham, Russ Genet, Bruce Holenstein, Dylan Holenstein, Rich Mitchell, and Sagar Venkateswaran,

Talks and Discussion Topics

1. Russ G.: Alt-Az Initiative history and goals, uses for medium-aperture scopes, progress on 1-m and 1.5-m scopes.
2. David D.: IOTA targets, history of multi-site deployments, weather predictions, various techniques.
3. Steve C.: IOTA use of underutilized East coast scopes.
4. Bruce H.: Gravic's plans to build a telescope array for high-time-resolution-astronomy (HTRA) and targets. The "IOTA Nano" iPhone4 concept. The iPhone4 has a back-illuminated CCD, GPS, networking, compass, and gyros built into the device.
5. Sagar V.: Super caps, cold silvering solutions and applications for astronomy and solar power collection.
6. Ed D.: His interest and uses for a 2-m spectroscopic telescope.

Contact Bruce if you would like copies of the talk slides.

Bruce led the group on a tour of Gravic's offices. Some projects shown include:

1. Bimorph mirrors,
2. Various detectors & high-speed electrometer,
3. Lightweight mirrors & scopes – meniscus, pneumatic, and Starstone,
4. Cold silvering and overcoating progress,

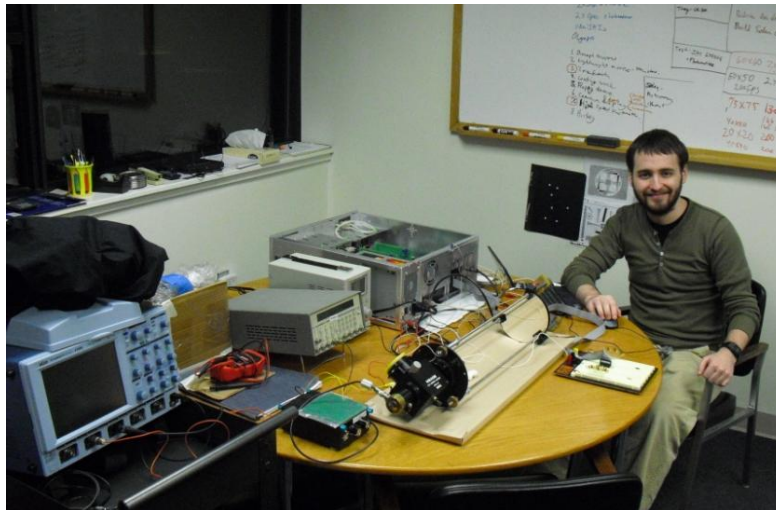
5. High-speed cameras: Photometrics Cascade 512B, 1k, CoolSnap 4K, JAI 6740GigE, Lumenera (Russ) & software
6. Remark demo (given by Victor)



Bruce (r) discusses the 42" Mylar pneumatic mirror with Ed and David. Behind Ed is a Bath interferometer used for assessing mirror quality.



Hubble Optics UL20 lightweight mount with an 18" OTF Designs foamglass mirror (uncoated) on a pneumatic warping harness. The whole telescope (and mount) weighs under 75 lbs and is very portable.



Alex Thompson is sitting by the 37-channel bimorph secondary project. OTF Designs coated the thin (0.5mm, 6" diameter) Sydor BK7 glass disk. At the other end of the secondary support rods is a photometer with an IRD photodiode detector, and high-speed electrometer. A Stanford digital delay pulse generator is used for producing precision flashes of an LED; the electrometer output is recorded at up to 10GS/s on the Lecroy oscilloscope.



David (l) and Russ discussing occultation techniques. David just showed the group his scope travel case and the way that the DVRs are controlled. A programmable handheld controller is stored in the envelope he holds along with the DVR recorder. A Plexiglas rod is placed in the bottom of the bag to transfer light from the controller to the DVR.



Steve showed us his orderly occultation recording equipment. Absent this organization, it was demonstrated after dinner by Bruce how quickly the wires inadvertently tangle into a Gordian knot!



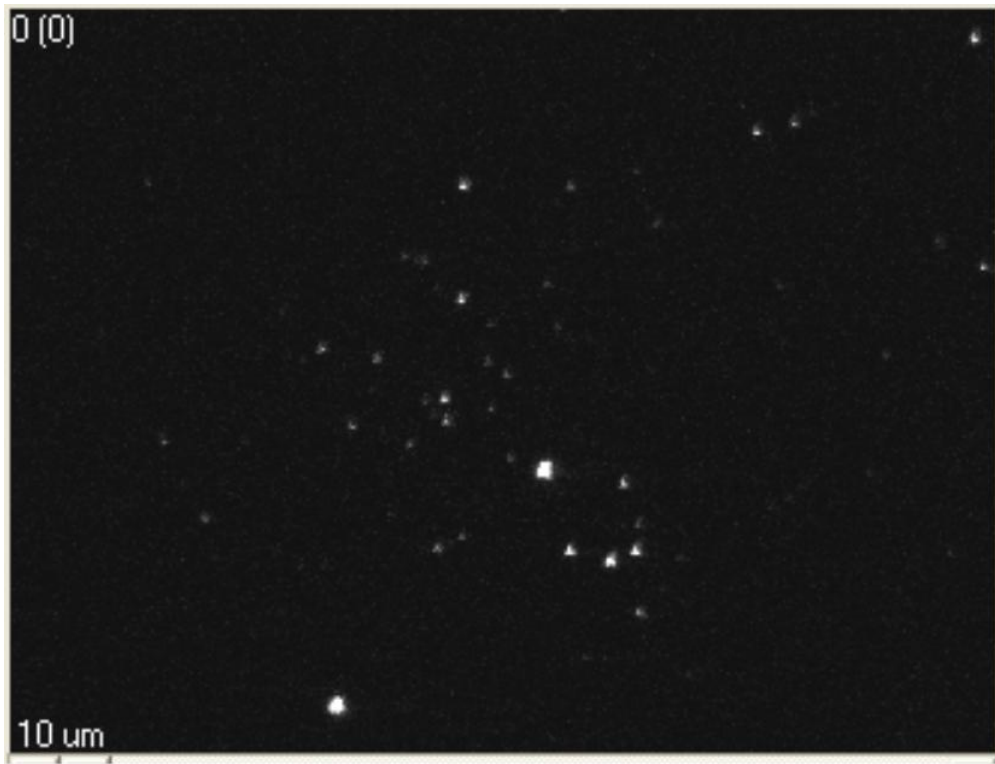
(l-r) David, Joan, Buddy, Ed, Russ, Bruce, Steve, Don. On the table in front of David is an IOTA Mighty-Mini made from half of a pair of binoculars.



The Hunt Room at the Desmond served an excellent meal.



After dinner, we set up two scopes and attempted to record some lunar occultations. Conditions were clear, but the 92% disk and slight lunar haze washed out the targets. Above, a 12" LX200 with an Andor Luca-S emCCD camera is shown. (l-r) Dylan, David, Don, Kevin Gruber, and Steve.



Above is a frame of the Double Cluster made from some recorded video. The 12" LX200 and Luca-S camera, Sloan r' filter, at 12 frames/second were used.



The UL20 is disassembled into major pieces. The OTF Designs foamglass mirror is setting on a “pneumatic warping harness” prototype. Russ is holding the top end and made suggestions for motorizing the axes.



Russ holds an 11” spun epoxy mirror just fabricated by Lisa Brodhacker at Lander U. Gravic will conduct the mirror quality tests.