

CHALLENGES IN INTRODUCING NEW OBSERVERS TO OCCULTATIONS

Roxanne Kamin

International Occultation Timing Association (IOTA)

Astronomical Society of Harrisburg (ASH)

Rittenhouse Astronomical Society of Philadelphia (RAS)

The Use of Fixed Observatories for Faint High Value Occultations

Steve Conard · IOTA · Gamber, MD · USA · steve.conard@comcast.net
Ted Blank · IOTA · Fountain Hills, AZ · USA · tedblank@gmail.com
Jack Gross · IOTA · Bedford, VA · USA · jack144@gmail.com
Roxanne Kamin · IOTA · Harrisburg, PA · USA · rlkamin@prodigy.net
John Moore · IOTA · Tulsa, OK · USA · john@jmooreou.com

ABSTRACT: The International Occultation Timing Association (IOTA) has supported the science community by taking part in high value occultation campaigns for many years. Until recently, most of these campaigns involved relatively bright target stars, and were most efficiently observed by deploying many small telescopes across the predicted path. A single ambitious observer could deploy ten or more stations, and the cost of each station was in the range of hundreds of dollars. In addition, small private or club observatories were occasionally utilized in providing single location chords. More recently, the most scientifically sought-after observations have tended to be faint stars being occulted by Jupiter Trojans, Centaurs, and distant Trans-Neptunian Objects (TNOs).

The Friedman Observatory

Penn State - Wilkes-Barre, PA

Dr. Violet Mager - Assistant Professor of
Physics

Jon Belanger - Observatory Assistant

16-inch Meade LX200

► Oct 2020 – Orus Event





14" CELESTRON EDGEHD /
PARAMOUNT MXII
HOLTWOOD, PA
AL RYAN – DIRECTOR
BERNIE EARLS – OBSERVATORY ASSISTANT

HI'IAKA EVENT – APRIL 2021



IMAGES COURTESY OF ROMR / EXELON GENERATION CO. LLC

- ▶ Day job logistics - volunteers
- ▶ Scheduling – practice sessions – limited opportunities to conduct a practice session.
- ▶ Generally arriving a few hours before the event (often after a days work and a long drive), time is spent working out "scope bugs" and getting onto the FOV.
- ▶ Due to budget cuts and more recently COVID, many club and university scopes are in need of some TLC.
- ▶ You do the best you can and the scope owner / docent is more happy than not that you got their scope dialed in or at least able to locate Betelgeuse.
 - ▶ Be prepared for the unexpected

SITE CHALLENGES

- RunCam Night Eagle Astro video camera (w/0.5X Focal reducer): \$160-\$190
- Watec 902H2 Ultimate: \$310
- Watec 910HX: \$592
- Watec 910HX/RC: \$610
- Mallincam RECON 828: \$700
- Startech SVID2USB23 USB video capture device: \$43
- IOTA VTI (Video Time Inserter) V3: Kit w/ Run Cam - \$530
- QHY174MGPS: \$1239

- Plus laptop, Stick, NUC / cables / extra GPS puck..
 - \$800 - \$1500 out of pocket cost to get started in occultations

- Gas, hotel, travel costs
 - SwRI, Lucky Star events

START-UP COSTS AND CAMERAS

- ▶ Interest in astronomy and astrophotography rapidly increased during COVID.
- ▶ Popular Cameras:
 - ▶ ZWO and their ASIAIR Pro WiFi Camera Controller
 - ▶ MallinCam SkyRaider series
- ▶ Growth in Smartphone / iPad use, decline in laptop use.
- ▶ Vision: Observer using a ZWO, ASI Air , collects event data using a flash timer and uploads her/his event data to an IOTA shared drive location.

POPULAR CAMERAS

- ▶ OccultWatcher
 - ▶ IOTA_VideoCapture
- ▶ OccuRec
 - ▶ PyMovie
- ▶ Limovie
 - ▶ Tangra
- ▶ Occular
 - ▶ ROTE
- ▶ PYOTE
- ▶ Windows centric. Many of us use aged laptops running WIN7, WIN10 w/o updates. Not an option on observatory systems. Millennials, Gen Z
 - ▶ Astro Flash Timer for iPhone
 - ▶ Occult Flash Tag for Android

Which apps do I need?

Which website?
Numerous links..

SOFTWARE

- ▶ Recording laptop is an aged Lenovo, running WIN10 that hasn't connected to the internet in over a year along with SharpCap Pro 3.2.6137.
- ▶ Yes, it is an old SC version. However, the combination is stable and GPS will consistently lock and remain locked. It is trustworthy. Many of us know the frustration of traveling, working an event, only learn that GPS dropped from "Locked" to "Partial Data" during event recording.
- ▶ In using 5 different scopes (aperture, f/l, mount types) over the past year, the laptop, SC and QHY (not upgraded) combination, is one less worry when I walk into a new site. For processing the light curve, the files are copied over to a "faster" laptop.
- ▶ In light of yesterday's comments regarding "quality data".
 - ▶ Data capture with some dropped frames
 - ▶ Or no data at all?
- ▶ A good calibration approach / no approach to when using a one camera / laptop set across a multitude of different size/ types of telescopes?
 - ▶ Goal to have a positive experience with the host site / new observer. See "the drop".



AGED QHY / LAPTOP

- ▶ Future advantages to IOTA (incl SwRI and LuckyStar) events in the use of similar local observatories / manpower.
 - ▶ High quality data
 - ▶ Future use of site
- ▶ Public outreach with positive publicity for the observatories.
 - ▶ Networking within the scientific community
 - ▶ Publication
 - ▶ Awareness of citizen science opportunities
 - ▶ Key to the observatory funding.
- ▶ Recruitment of new long-term observers and future IOTA contributors

ROLLING FORWARD