Notes on Discussion from Twinkle Amateur Workshop

9th January 2017, Royal Astronomical Society, London

Mark Salisbury: The Variable Star and Exoplanet section of the Czech Astronomical Society has an Exoplanet Transit Database (http://var2.astro.cz/ETD). This system offers tools (e.g. trend correction for data), allows instantaneous upload, provides some level of near-instantaneous feedback on data but doesn't have much of a filter system regarding the quality of the data. A good example to follow is the Centre for Backyard Astrophysics (CBA), which helps with know-how, and provides feedback to observers via their active science lead (viz. Joe Patterson and others, see www.cbastro.org).

Claudio Arena: The Italian Amateur Society (Unione Astrofili Italiani) could provide input based on the experiences of their observers. Italian amateurs couldn't find any way of publishing their data except via ETD. The problem with ETD is that you can't trace back the raw data and see how it has been processed e.g. you can download the reduced data but can't see how the data reduction was done, or work back to the flat field. This means it is of limited use for science and for publishable work.

Marco Rocchetto: The new "*Connect Telescope*" is a platform being developed by Konica-Minolta. It is a cloud-based system that allows the connection of telescopes to a common system. The platform includes online (cloud) tools to store data (FITS files), analyse data (e.g. photometry) and to manage observing requests. A prototype is being developed and will be soon ready (end Feb 2017). Several KM-owned telescopes and soon two telescopes at UCL Observatory, Mill Hill, are connected to the platform. Twinkle proposes to use this platform to centralise the storage and analysis of images generated as part of the campaign. One of the biggest problems in interfacing the amateur and scientific communities is the lack of traceability in amateur data. Researchers need precise information on timing, calibration, etc. to make the data usable – a centralised methodology would help greatly.

Sam Anahory: Is it necessary to produce a new platform? The American Association of Variable Star Observers (AAVSO) has been doing this type of activity for years (https://www.aavso.org). Contributors submit images or raw data; researchers can use data how they want. AAVSO has developed online procedures e.g. to baseline optics with the optics used by amateurs. Researchers can alert amateurs subscribed to AAVSO via specific notifications and ask them to gather observations of objects of interest during specific time windows.

Roger Pickard: The BAA Variable Star Section database is more stringent in uploading comparison star and other supplementary data than is the case for the AAVSO database, although the AAVSO has much more data overall.

What data capture tools are out there/needed?

- There are quite a lot already available via AAVSO.
- Gaia-GOSA tools (http://gaiagosa.eu) take contributors' asteroids image data (all, including flat field) and then processes them for the observer to generate the finished lightcurves.

- Need to look at existing wheels and see what new wheels may need to be developed.
- Eliot Hall and Sam Anahory have both written software for observing exoplanets.
- Involving the worldwide amateur community and observers using remotely-controlled telescopes (e.g. http://www.itelescope.net/) would allow observations spread in geographical longitude and provide better cadence for partial transits, ingress and egress, etc. provided accurate absolute photometry can be achieved using the latest catalogues (e.g. UCAC-4, and in the near future using Gaia).

General feedback: The worst possible result of a campaign would be that amateurs generate data that just disappears into a black hole since this would be demotivating.

As well as the BAA Variable Star and Asteroid section directors, it would be useful if a working group of three or four volunteers were established, which could then progress matters in more detail in support of *Twinkle*.

Volunteers:

Sam Anahory, Mark Trapnell, Mark Salisbury, Eliot Hall

Next steps:

- Identify process, people, tools.
- Working group meeting on 24th January
- Follow-up community meeting on 2nd March
- Europlanet workshop before the end of 2017

Anita Heward, Richard Miles, Roger Pickard

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