

# DVAA Quasar Observing Program

The purpose of this program is to provide an opportunity to observe Quasars, BL Lacertae Objects (BLO) and Active Galactic Nuclei (AGN). At first it may seem intimidating to observe them. However, with the proper conditions the observer will be able to see and document these distant, dim and energetic objects. It will also serve as a new and different challenge for the advanced amateur observer or astrophotographer.

The program will definitely hone your observing skills in finding, detecting, recording these seemingly elusive objects.

## 1. Requirements for Completing the Program:

- Observers will be required to observe any 50 quasars, BLOs or AGNs from **Appendix A** (hyperlink) for the Quasar Observing Program certification.
- Observations will be telescopic and can be recorded either visually (V) or electronically/photographically (E).
- The galaxies can be located manually (M), with digital setting circles or GOTO telescopes (D).
- For Visual observations, log sheets should contain:
  - Latitude and Longitude of observation.
  - Sky conditions: transparency and seeing.
  - Telescope aperture and focal length.
  - Whether the object was found manually, with digital setting circles or a GOTO telescope.
  - Magnification
  - The reference number of the quasar, BLO or AGN observed.
  - A small sketch indicating the position of the object in reference to the foreground stars.
- Photographic or digital imaging observations, the image:
  - Should have the object indicated on the image with an arrow or line.
  - In addition, log sheets should contain:
    - Type of camera used.

## 2. Rules for Completing the Program:

- The log sheets and electronic files containing digital images (which should be submitted on a CD-ROM) should be sent to the DVAA **Observing Chair** (hyperlink) for verification.

Appendices:

**Appendix A**, (hyperlink) by constellation

**Appendix B**, (hyperlink) by magnitude

**Appendix C**, (hyperlink) by Right Ascension

**Appendix D**, (hyperlink) macro to calculate distance using redshift Z value

Reference: "Catalogue of Bright Quasars and BL Lacertae Objects", Wolfgang Steinecke [http://www.klima-luft.de/steinicke/KHQ/khq\\_e.htm](http://www.klima-luft.de/steinicke/KHQ/khq_e.htm)

### Hints on Observing Quasars, BLOs and AGNs

The above mentioned reference is a very valuable tool in compiling a strategy for attacking these most objects. To make things that much easier we also added the pages of the Uranometria (1<sup>st</sup> and 2<sup>nd</sup> editions) and Millennium star atlases which were obtained from the web site: [www.Messier45.com](http://www.Messier45.com). That site also has finder charts and an image of the object that one may print out for field use. One may use other software programs such as MegaStar<sup>®</sup> for such purposes.

Preliminary 'homework' beforehand includes making an observing list for the upcoming session(s). The observing list will have the object name, constellation, magnitude, distance and page of Uranometria and page of Millennium. In the observing field one would then star hop using the Uranometria atlas under low magnification and, if need be, star hop using the fainter stars plotted in the Millennium atlas. The image provided from the aforementioned web site proves helpful in determining which star-like object is the quasar. To view the particularly dimmer objects, higher magnification is highly recommended. Once the object is located, then a verbal description can be dictated in a micro cassette recorder and/or a rough sketch of the eyepiece field can be made. The appendices also provide the observer with the redshift ( $z$ ). **Appendix D** (hyperlink) is an Excel macro that will calculate the distance in megaparsecs (Mpc) and millions of light years (Mly) just by typing in the  $z$  value. Having the distance of the object available to the observer at the eyepiece adds an additional sense of wonder, awe and satisfaction.

Certificate:

Certificate will have an indication after the certificate number: a **V** for Visual observation or an **E** for electronic observation, and an **M** for manual finding of objects or **D** for use of digital setting circles or GOTO telescopes.