Gaia-FUN-TO and the observations of Gaia Alerts objects using Serbian-Bulgarian mini-network telescopes

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Introduction

- The ESA space astrometry mission Gaia (December 2013).

- 1 000 000 stars and 500 000 QSOs, Gaia celestial reference frame (QSOs based one, Gaia CRF), extragalactic radio sources (ERS) in optical domain, morphology and photometry of targets.

- The follow-up network for the Gaia photometric alerts.

Mini-network (5 telescopes):

- 60cm ASV (Astronomical Station Vidojevica, AOB, Serbia),
- 2m Rozhen (NAO BAS, Bulgaria), 60cm Rozhen, 50/70cm Schmidh (Rozhen),
- 60cm Belogradchik AO (Bulgaria).
- Johnson UBV and Cousins RI filters.

The instruments:

1) 60 cm Cassegrain (long.=21.5º, lat.=43.1º, h=1150m),
CCD Apogee Alta U42, ASV (Serbia),

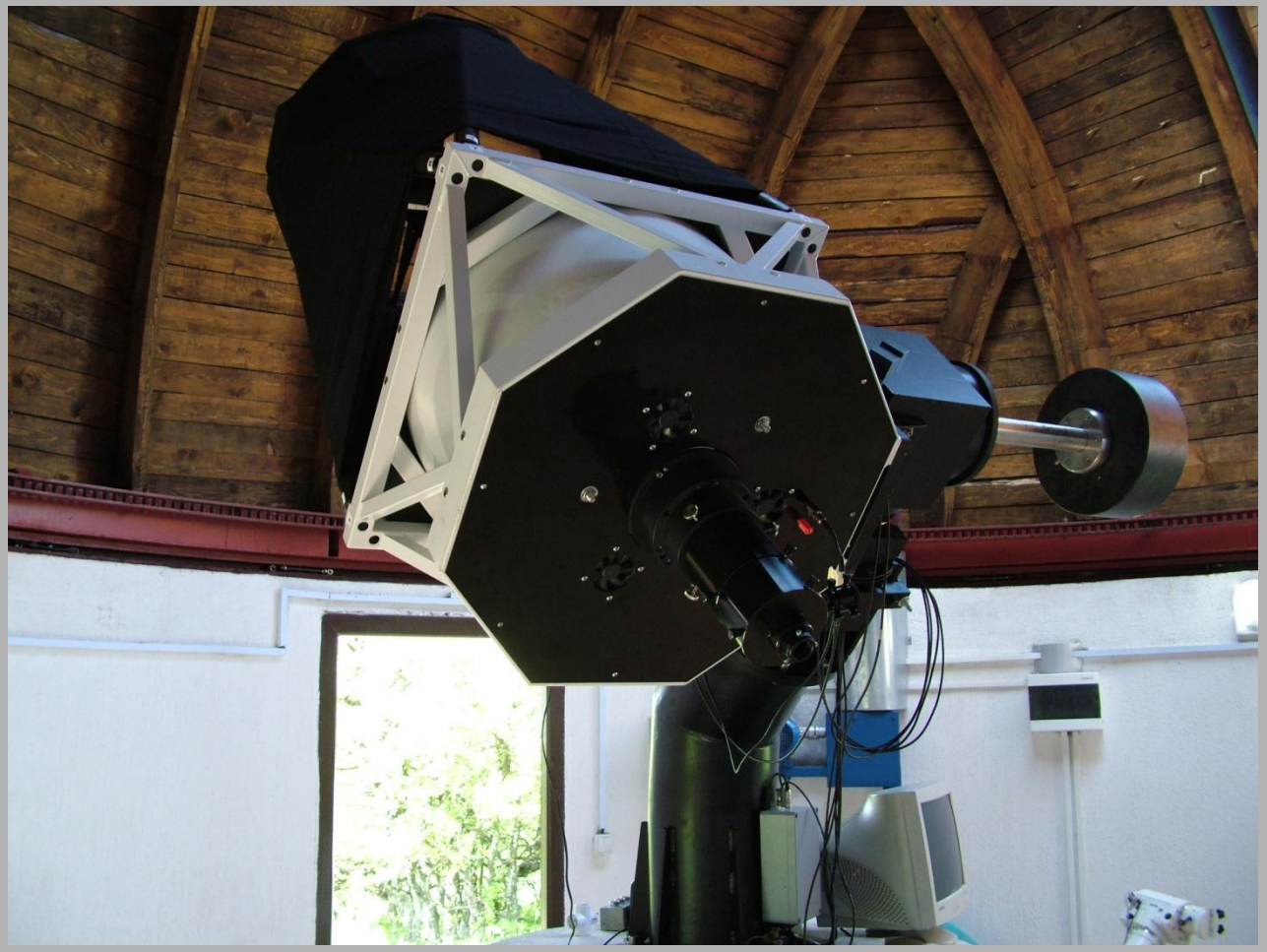
2) 2m Ritchey-Chrétien (24.7º, 41.7º, 1730m),
CCD VersArray 1300B, Rozhen Observatory (Bulgaria),

3) 60cm Cassegrain (24.7º, 41.7º, 1759m),
CCD FLI PL09000, Rozhen Observatory (Bulgaria),

4) 50/70cm Schmidt-camera (24.7º, 41.7º, 1759m),
CCD FLI PL16803, Rozhen Observatory (Bulgaria),

5) 60cm Cassegrain (22.7º, 43.6º, 650m),
CCD FLI PL09000, Belogradchik (Bulgaria).

60cm ASV (Serbia), since mid 2011



Optical observations of targets for Gaia Alerts

2m Rozhen telescope

1) The ASV (D/F=0.6/6m) tel. The CCD Apogee Alta U42: 2048x2048 pixels, pixel size is 13.5x13.5 μm, scale is 0.″465/pixel, FoV=15.8x15.8′.

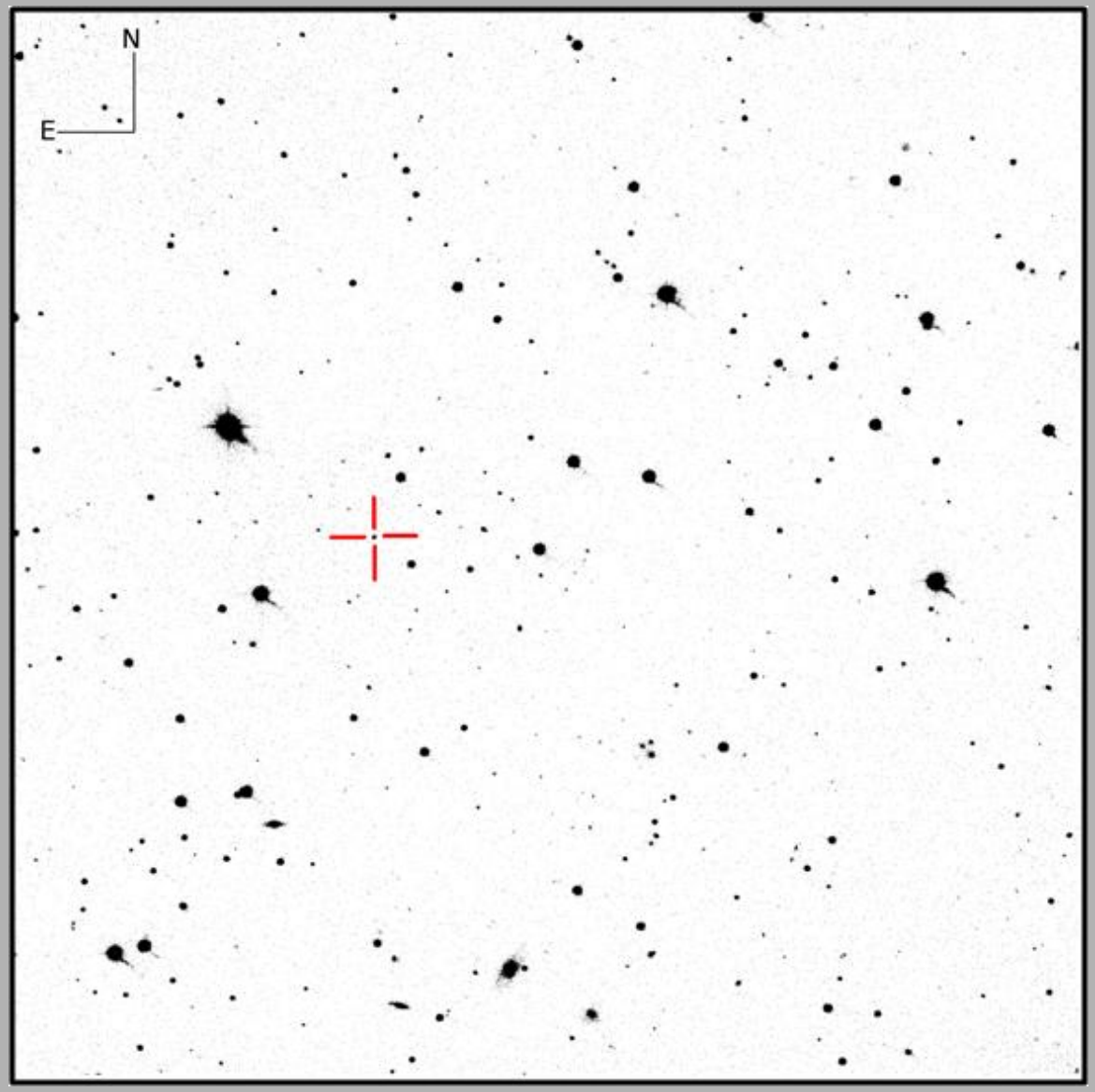
2) The RC (D/F=2/16m) tel. of Rozhen National Astronomical Observatory (NAO) of Bulgarian Academy of Sciences (BAS). The CCD VersArray 1300B: 1340x1300, 20x20μm, 0.″261/px, 5.6x5.6′.

3) The 60cm Rozhen (F=7.5m) tel.
The CCD FLI PL09000: 3056x3056, 12x12µm, 0.″33/pixel, 16.8x16.8'.

4) The 50/70cm Schmidt (F=1.72m), Rozhen.
The CCD FLI PL16803: 4096x4096, 9x9µm, 1.″08/pixel, 73.7x73.7' .

5) The 60cm Belogradchik (F=7.5m) tel.
The CCD FLI PL09000: 3056x3056, 12x12µm, 0.″335/pixel, 16.8x16.8'.

Gaia14aae (GaiaVerif14acp), R-filter, Oct. 21st 2014, ASV



Campbell, H. C.,…, Damljanovic, G., et al.: 2015, Total eclipse of the heart: the AM CVn Gaia14aae/ ASSASN-14cn,MNRAS, 452, 1060-1067.

Observed objects (17)

- **60cm ASV**:
  Gaia14aae(1), Gaia15 aai(1), Gaia15aaj(1), Gaia15aal(1), Gaia15aba(1), Gaia15ace(1), Gaia15abn(1), Gaia15ael(1), Gaia15aek(1), Gaia15aea(1), Gaia15adu(1), Gaia15afd(5), Gaia15afq(4), Gaia15aft(3), Gaia15afc(1), Gaia15aff(4), Gaia15aer(1).

- **60cm Belogradchik**:
  Gaia14aae(1), Gaia15afd(2).

- **2m Rozhen (FoReRo2):**
  Gaia15aff(1).

- **50/70cm Schmidt-camera (Rozhen):**
  Gaia15aff(1).

Conclusions

- The observations of Gaia-FUN-TO in optical domain (with BVRI filters) by using mentioned telescopes and good CCD detectors; the seeing=1.″0 to 3.″5 (~1.″2 for 60cm ASV).
- These telescopes are useful for the photometric observations of Gaia Alerts objects: 17 ones at the ASV (Serbia), 3 ones at the Rozhen and Belogradchik (Bulgaria).
- With calibration (dark, bias, flat, hot/dead pixels, etc.) and stacking of data, it is possible to catch ~20mag target by using 2m Rozhen tel. and until ~19mag with other mentioned instruments. The exp.time until ~5min.
- Bellissima project, 1.4m telescope at ASV site (2016?).

Thank you!