

# MONECOM Physical Characteristics of Main Belt Comets

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## ABSTRACT

This project aimed to carry out photometric observation of several Main Belt Comets (MBCs). Observation and data reduction was to be carried out by high-school students from three countries (Croatia, Greece, Serbia), supervised by their teachers and local astronomers. Here we present some results by Serbian team.

## CONTEXT

In order to get high school students interested in science, particularly in astronomy, it is of great importance to make them able to use modern equipment, as well as to introduce them to modern trends and recent discoveries. MONECOM project tries to do both:

- High school students are given opportunity to work with 1.2m robotic telescope MONET/North
- Students are supposed to observe, under the supervision of their teachers and local astronomers, three MBCs, thus getting in touch with one of the most recent research topics in Solar System astronomy.

The final aim of the project is to get participating students through the process of photometric observations, reduction and analysis and interpretation of obtained data.

## OBSERVATION PLAN

Observations were to be carried out by students from three high schools, one from Croatia, one from Greece and one from Serbia. Serbian team was made of participants and assistants of astronomy seminars in Petnica Science Center, six high school students and two students of undergraduate studies of astrophysics from Belgrade University. Team was coordinated by Igor Smolić and Ivan Milić and supported by Dr Milan Bogosavljević (AOB). Serbian team covered nights of 28/29<sup>th</sup> and 30<sup>th</sup>/31<sup>st</sup> of October. Total of 6 hours was used for observations each of the nights. Three of the main targets were observed by Serbian team:

- 1) 176P/LINEAR
- 2) 238P/Read (P/2005 U1)
- 3) P/2010 R2 (La Sagra)

Observations were carried out from Astronomical station Vidojevica, where students also got opportunity to get in touch with observational facilities of Astronomical Observatory.



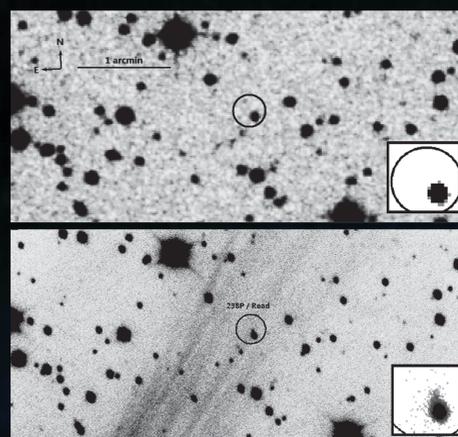
**Figure 1:** The 1.2 meter MONET/North telescope at McDonald Observatory, Texas, USA



**Figure 2:** Serbian team during MONECOM observing session at the Astronomical Station Vidojevica.

## RESULTS

Observed frames were reduced and further processed by PSC students during astronomy summer camp 2012. Maxim DL and AstroArt, along with DS9 were used for image reduction and processing.

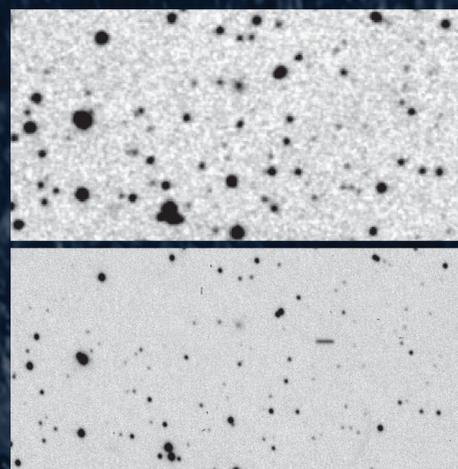


**Figure 3:** Detection of 238P/Read Main-belt comet.

**Top:** Zoom-in on field as given in DSS photographic atlas.

**Bottom:** Zoom-in on the field as observed on night of 30<sup>th</sup>/31<sup>st</sup> of October.

**R filter, total exposure: 20 min.** As it can be seen Read was just transiting a star, which rendered any photometric measurements impossible.



**Figure 4:** Detection of asteroid 3200 Phaethon, parent body of the Geminids meteor shower.

**Top:** Zoom-in on field as given in DSS photographic atlas.

**Bottom:** Zoom-in on the field as observed on night of 30<sup>th</sup>/31<sup>st</sup> of October.

**R filter, total exposure: 450 sec.** Cometary behavior was not observed.

Two of our main targets 176P/Linear and P/2010 R2 (La Sagra) and two objects from the list of secondary targets P/2010 TO20 and 2008 YB3 are not detected on images with cumulative exposure of 10-20 minutes. It seems that additional observations with much longer exposure times are needed to detect and study those objects with telescope of this aperture size.

## ACKNOWLEDGEMENTS

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