GAUSS Srl

Group of Astrodynamics for the Use of Space Systems

CastelGAUSS Project

GAUSS offers technical assistance and its know-how in the space debris field through **CastelGAUSS Project at CastelGauss Observatory.**

Castelgrande Astronomical Observatory forms part of the **International Scientific Optical Network (ISON)**, managed by Dr. Igor Molotov of the **KIAM** Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences.

CastelGAUSS Observatory is located in the area of Toppo di Castelgrande (**altitude of 1250 meters a.s.l.)** in the Italian region of Basilicata, particularly suitable for space objects observation, which already hosted the big astronomical observatory run by INAF-Capodimonte. The new building hosting CastelGAUSS project - dedicated to the detection of space debris and asteroids - has been added in 2014 and is run by **GAUSS** and **KIAM**. It contains automatised telescopes for optical observations and interfaces for structural tests.

Inside the dome, there is a **22-cm aperture ORI-22 telescope** (with 4.1×4.1° FOV, 510mm focal length and 4.82 arcsec/px scale) installed on a Skywatcher EQ-6 Pro mount and equipped with a 3k×3k FLI CCD camera. A second observatory dome is about to be installed to host a 35-cm Ritchey-Chrètien telescope with 40' FOV on a Skywatcher EQ-8 mount.

ISON-Castelgrande Observatory's geographical coordinates are 15.46339 0.758034 + 0.650341 and its **site code is L28** (MPC code assigned by the Minor Planet Center).

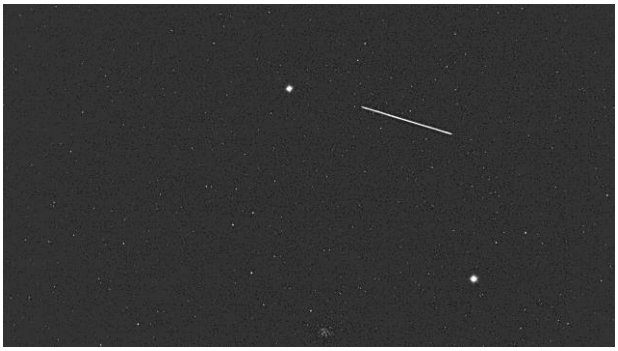
Main Facts

Activities:

- Space Debris Monitoring and Research;
- Optical observation and detection of NEOs and GEOs;
- Photometric measurements;
- Astrometry and photometry.

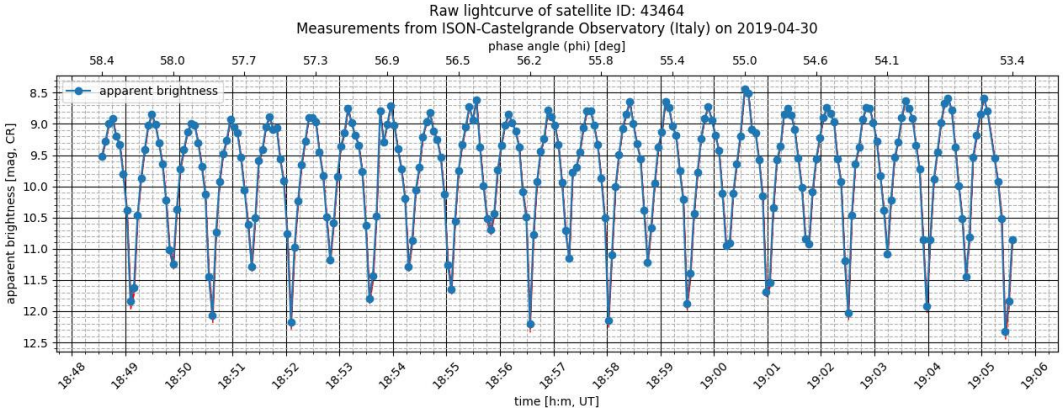
Recent achievements:

- **Observation of the Chinese Space Station Tiangong-1** while passing over Italy during its descent to re-enter the Earth atmosphere, on March 31, 2018;



- **Optical detection of the afterglow** in July 2018 *(*event GRB 180720B);

- Photometry of satellites and space debris – **acquisition of lightcurves and determination of rotation periods.**

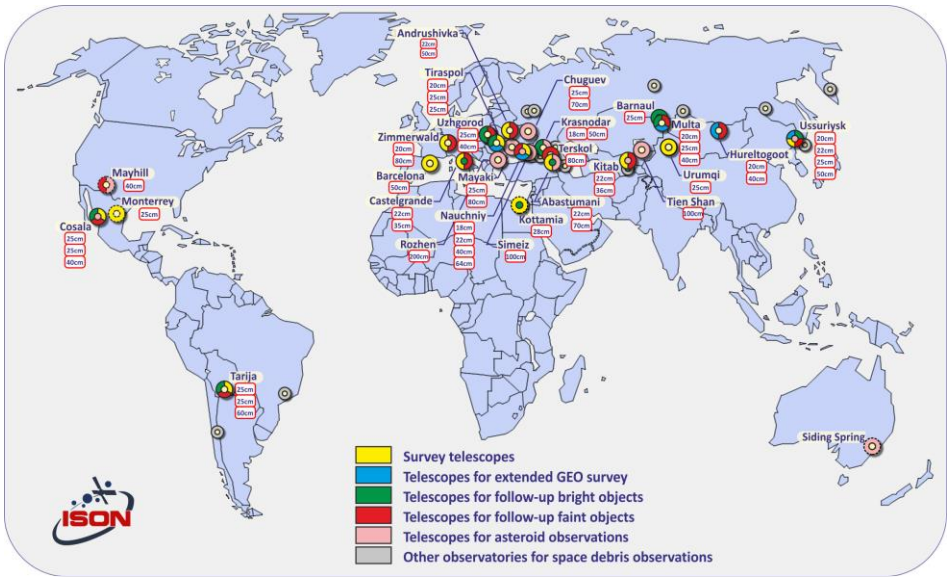


gaussteam.com
info@gaussteam.com
+39 06 97881440
Via Sambuca Pistoiese 70, 00138 - Rome - Italy

Monitoring Services Offered

Castelgrande Observatory provides the following services:

- **Measurements from the Astronomical Observatory of Castelgrande:** the customer can perform positional measurements (orbit determination) with 1-2 arc seconds accuracy. The estimated cost of one observational campaign is 3,000 Euro.
- **With the entire ISON Network:** Possibility of involving at least 5 telescopes of the network - spread over the world - for better observational coverage (for instance in case of bad weather). In general, for this kind of observational campaign there are 3 observational sessions separated by a couple of hours and spanned through the entire night. These observations are performed at each one of the observatories, for several consecutive nights; during the entire campaign the orbit determination can be carried out at KIAM's Conjunction Analysis Centre with the output in a required data format. Orbit determination accuracy for non-active GSO (without maneuvers) obtained on the basis of measurements from multiple observatories is down to 200 meters, in some rare cases even 120-150 meters. For this type of service the estimated price is 15,000 Euro for one campaign (for 10 satellites) or, for example, 60,000 Euro per year.



gaussteam.com
info@gaussteam.com
+39 06 97881440
Via Sambuca Pistoiese 70, 00138 - Rome - Italy