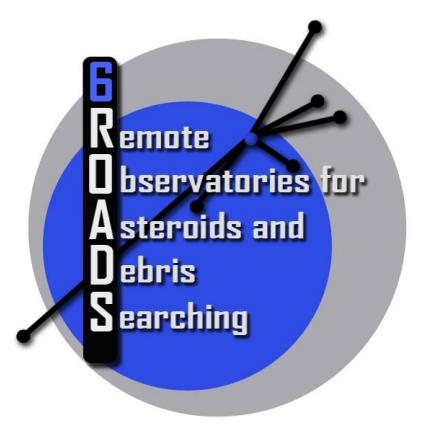
Highly precise optical observations of NEO, fast-moving satellites and Space Debris from a worldwide telescope network



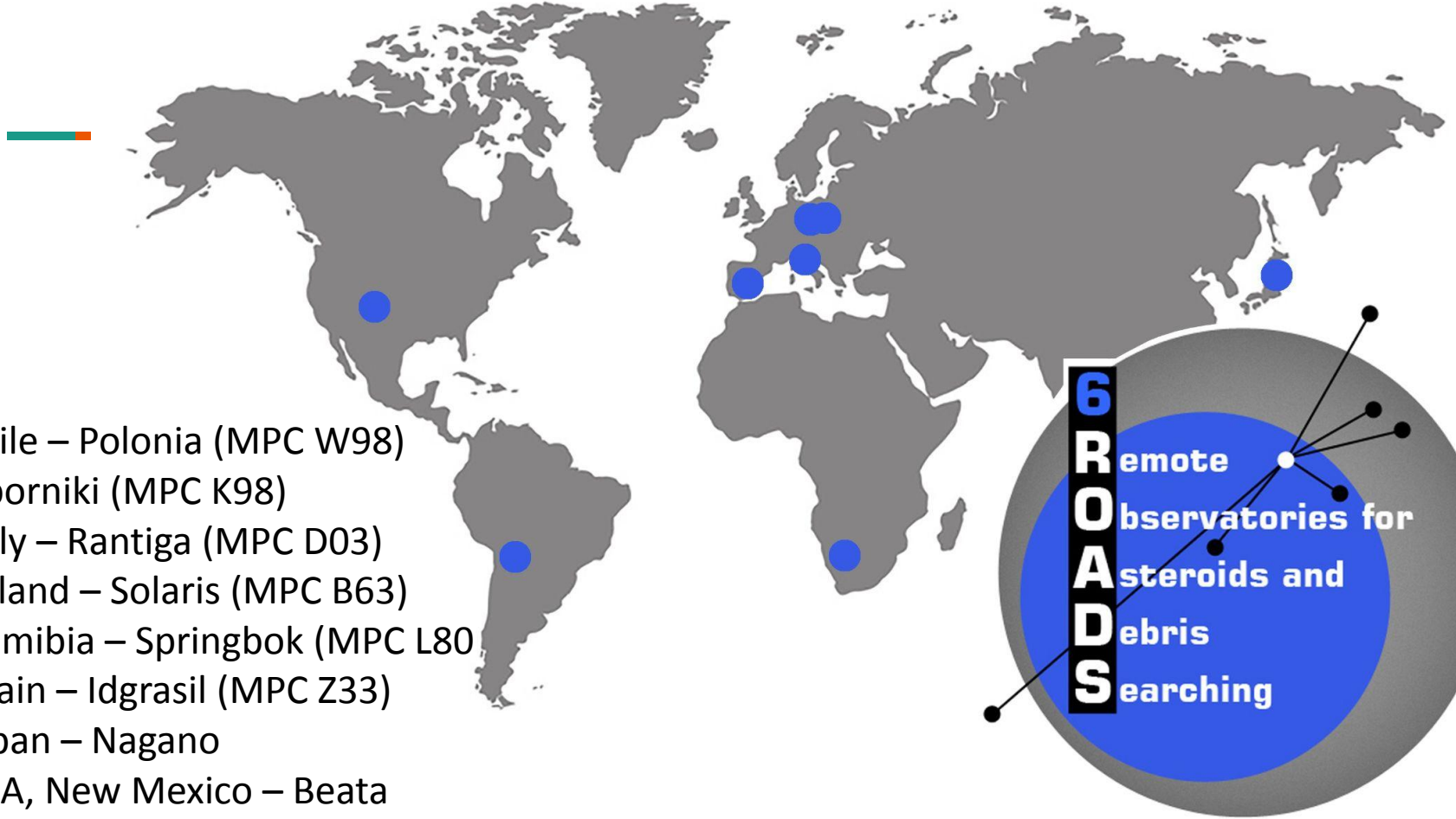
Mr. Michał Żołnowski
Affiliations: 6ROADS Ltd.

Mr. Marcin Gędek
Affiliations: 6ROADS Ltd.

Dr. Toni Santana-Ros
Affiliations: Institut de Ciències del Cosmos (ICCUB), Universitat de Barcelona (IEEC-UB), Departamento de Física, Ingeniería de Sistemas y Teoría de la Señal, Universidad de Alicante, 6ROADS Ltd.

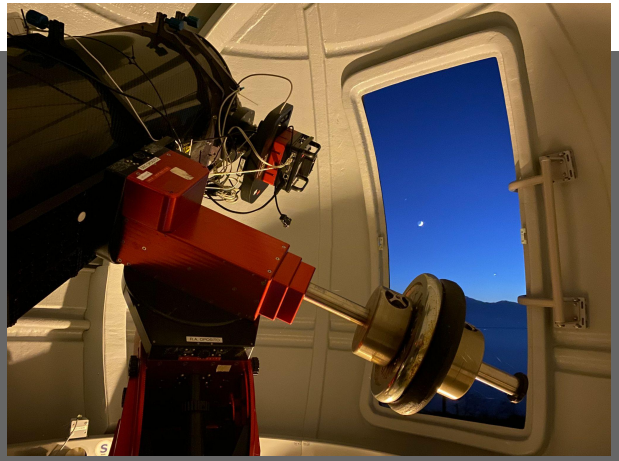
7th IAA Planetary Defense Conference

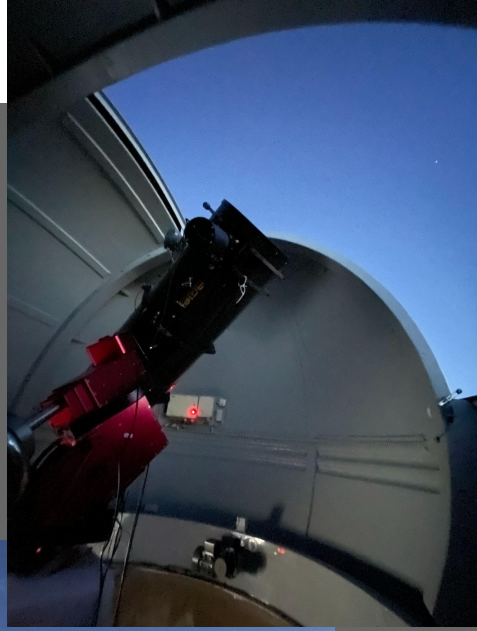
We own 8 optical fully independent observatories.



1. Chile – Polonia (MPC W98)
2. Oborniki (MPC K98)
3. Italy – Rantiga (MPC D03)
4. Poland – Solaris (MPC B63)
5. Namibia – Springbok (MPC L80
6. Spain – Idgrasil (MPC Z33)
7. Japan – Nagano
8. USA, New Mexico – Beata


Rantiga, Italy






Idgrasil Spain

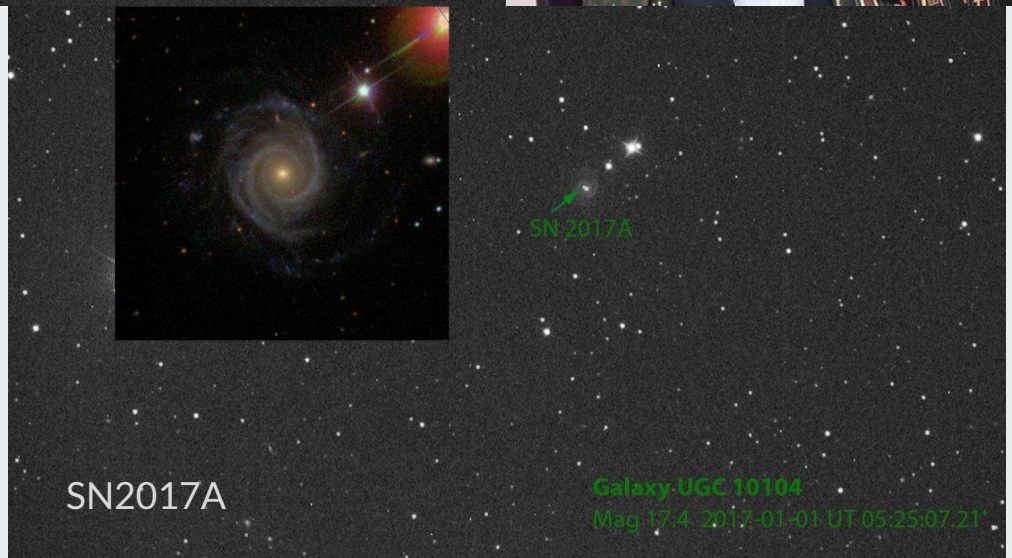

Springbok, Namibia

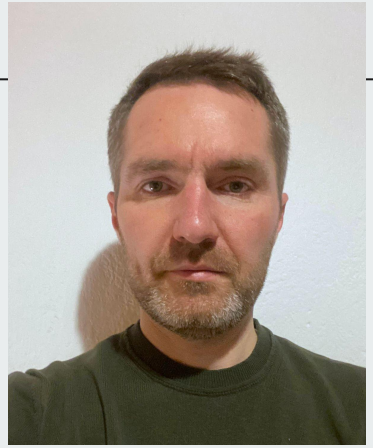
Nagano, Japan

C 2015 F2 (Polonia)

Hans Zimmer
495253 Asteroid

Roger Waters 495181 Asteroid





Marcin Gędek

Toni Santana-Ros

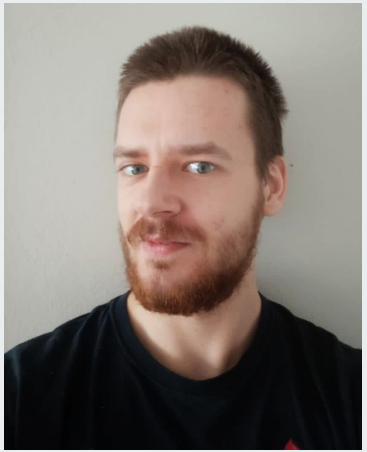
Michał Żołnowski

GROADS
Remote Observatories for Asteroids and Debris Searching

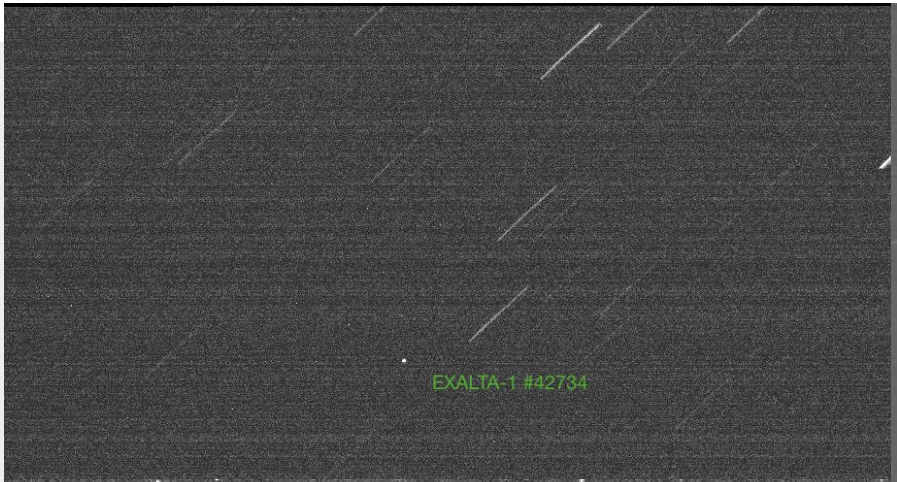
Patrycja Bagińska

Rafał Reszelewski

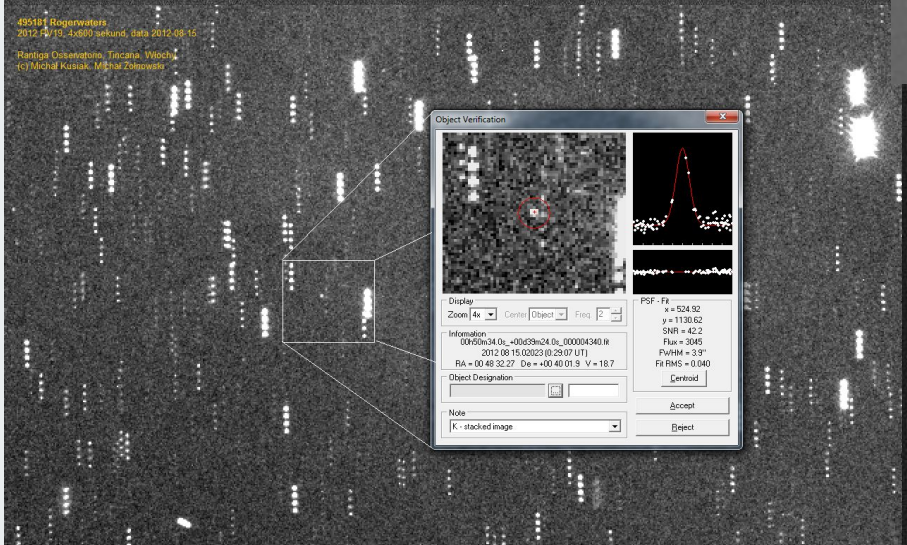
Łukasz Kozłowski



Kamil Żukowski

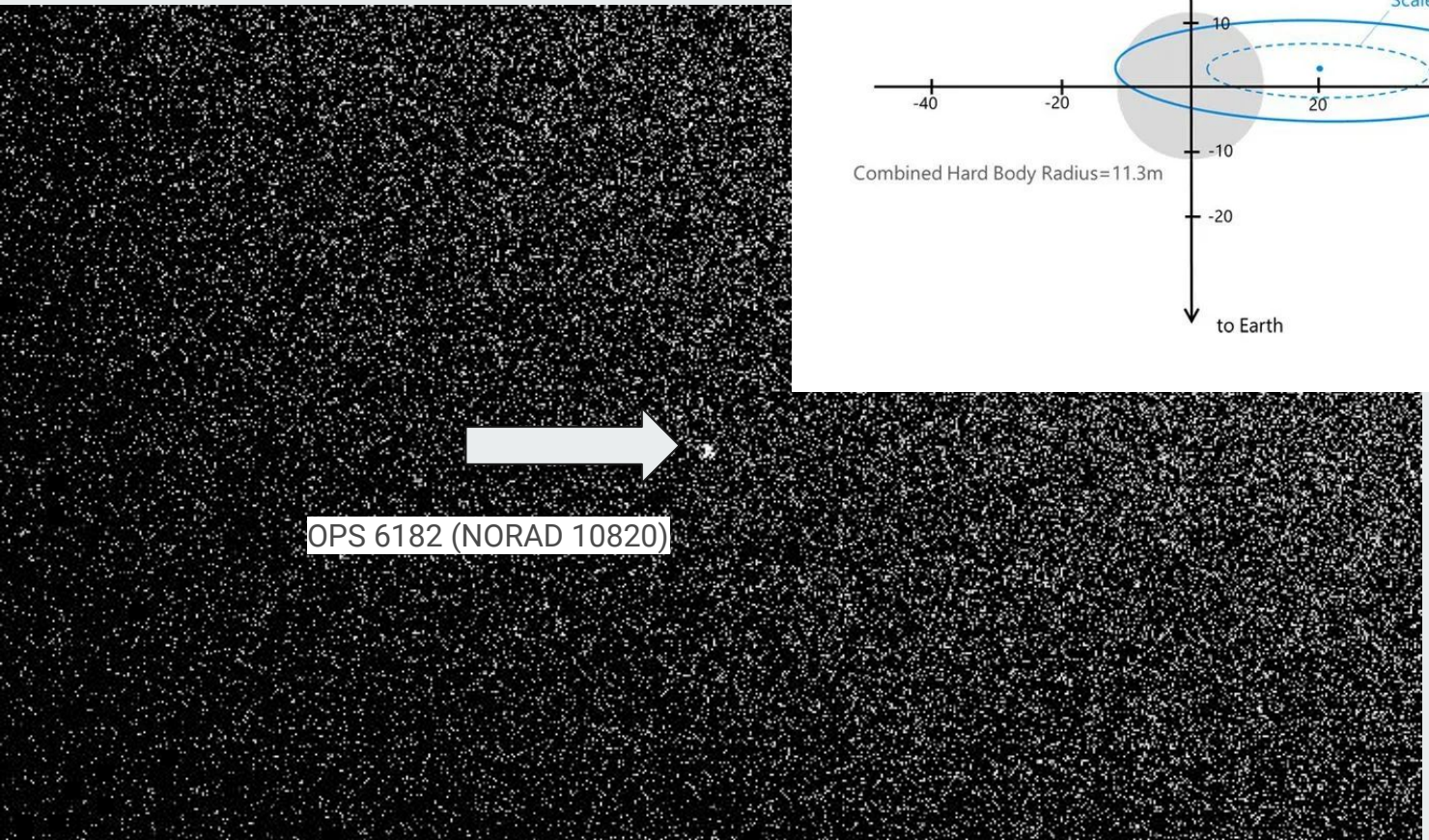

EXALTA-1 #42734

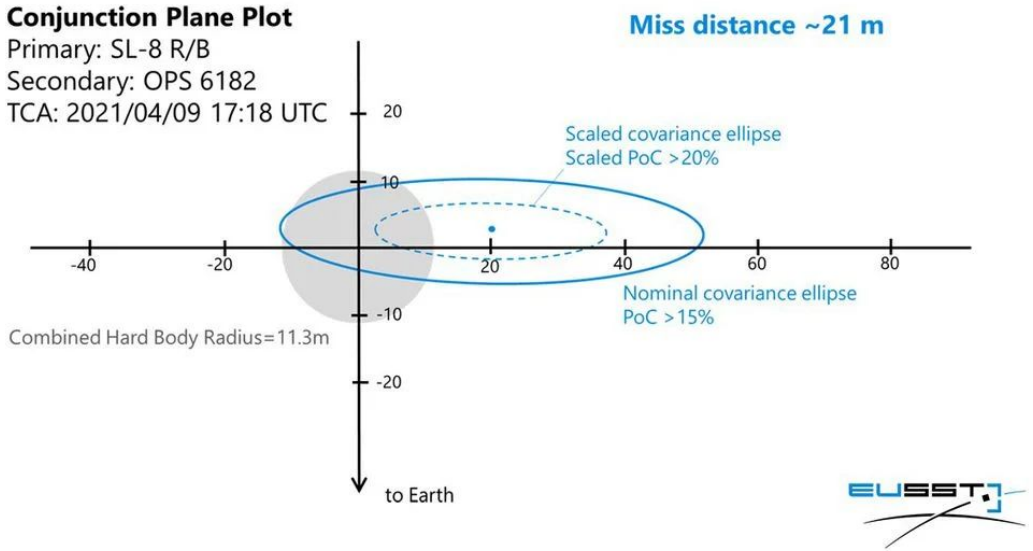

BepiColombo flyby


495181 Rogerwaters
2012 FV19, 4x600 sekund, data 2012.08.15
Rantiga Osservatorio, Tincana, Włochy
(c) Michał Kusiak, Michał Zołnowski
Object Verification
Display
Zoom 4x
Centre
Object
Freq
2
Information
00h50m34.0s_+00d39m24.0s_000004340.fit
2012 08 15.02023 (0:29:07 UT)
RA = 00 48 32.27 De = +00 40 01.9 V = 18.7
Object Designation
Note
K - stacked image
PSF - Fit
x = 524.92
y = 1130.62
SNR = 42.2
Flux = 3045
FWHM = 3.9"
Fit RMS = 0.040
Centroid
Accept
Reject


ISS
ISS 2.1.2017 08.16 UT

7.33 PM 9. April. 2021
15 minutes after close encounter.





- Consortium Leader in Polish part of Observational Grand 1SST2018-20 - **18 ground observatories**

Collaboration with ESA Planetary Defence & Space Debris Offices

European Space Agency

- **E2E POC**: End-to End Procedure for Satellite Orbit Catalog from Optical Observation
- **POLTELSST**: Polish Telescopes Qualification for SST
- **SPACE STONES**: Space Surveillance and Tracking in Observational Network with Event -Based Sensors
- **OGS** Camera Requirements and Benchmarking
- **POSST** Polish SST Small Telescope Assessment and Prototyped Operations
- **CORE SOFTWARE**: Customised SST Software Elements in the SST Core Software and Expert Center
- **OCTOPUS**: NEO Observation Campaigns from the Southern Hemisphere
- **CARMEN**: Coordination of Activities Regarding Moon, Earth and NEOs

Project OCTOPUS

NEO Observation Campaigns from the Southern Hemisphere

30 months

Number of NEOs observed and reported to MPC: >40 NEOs

European Space Agency

GRADOS Remote Observatories for Asteroids and Debris Searching

OBSERVATIONS TO BE PERFORMED

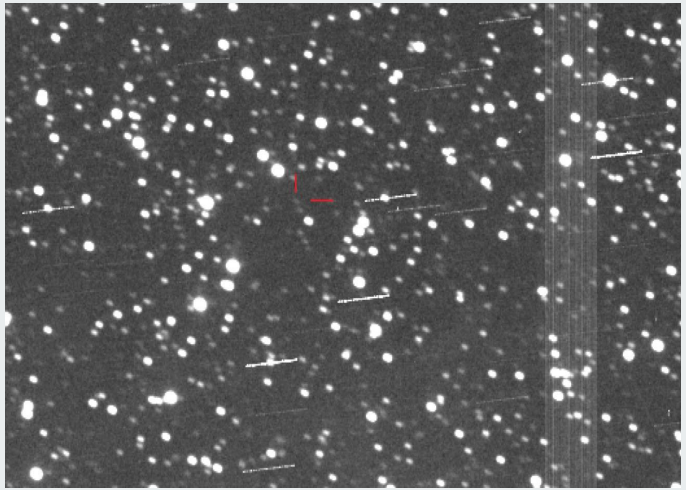
ALERT: 160 hours

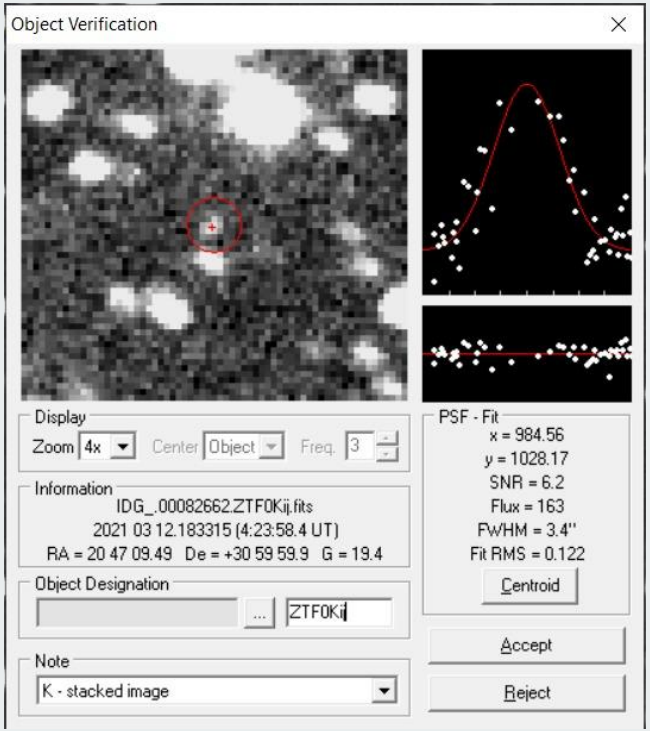
FOLLOW UP: 483 hours

OBSERVATIONS EXECUTED

ALERT: 14 hours (9 %)

FOLLOW UP: 82 hours (17 %)





Adam Mickiewicz University Poznań

MERGESOFT

Project OCTOPUS

Telescope involved in the project:

2 meters:
1x Siding Spring Observatory (Australia)
1x Haleakala Observatory (Hawaii, USA)

1 m telescopes
2x Siding Spring Observatory (Australia)
3x South African Astronomical Observatory (South Africa)
3x Cerro Tololo Observatory (Chile)
2x McDonald Observatory (Texas, USA)
2x Teide Observatory (Spain)
1x Zadko telescope (Australia)

and 12 other smaller telescopes

Zadko, Australia

Project CARMEN

Coordination of Activities Regarding Moon, Earth and NEOs

36 months

6ROADS, Deimos, University of Groningen, University of Oldenburg

TELESCOPE NETWORK IN 6 CONTINENTS

EUROPE
OGS
CAHA
Tautenberg
Klet

ASIA
Nagano
Himalayan Chandra Telescope
J C Bhattacharya telescope
OWL network

SOUTHERN HEMISPHERE
OCTOPUS network

6ROADS Remote Observatories for Asteroids and Debris Searching

deimos elecnor group

university of groningen

CARL VON OSSIETZKY UNIVERSITÄT OLDENBURG

esa European Space Agency

Project CARMEN

LUNAR IMPACT FLASHES
6ROADS
NELIOTA (Greece)
IAA-UHU (Spain)

ARCHIVE DATA MINING TASKS
(AstroWISE)

COORDINATION OF FIREBALL OBSERVATIONS

OBSERVERS WORKSHOPS

Company designed for special tasks

- very fast response time
- observations demanding individual approach
- very skilled observers and analysts
- fast decisions and elastic strategies

Thank you!

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