

Design of Multipurpose Instrument for Ranging of Satellites and Space Debris and for Remote Sensing in Atmosphere

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Boosting Research Potential for Photonics in Latvia – Towards Effective
Integration in the European Research Area”)***

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Project status

- The presented SLR telescope was developed in accordance with the Cooperation Agreement between HEE Photonics Labs Ltd (Latvia) and University of Latvia (*project “EGLE”*)
- Current status:
 - the telescope mount sub-assemblies and nodes are designed and manufactured and assembled and adjustments and tests are performed
 - the main Mirror is manufactured, secondary mirror is produced
 - the completing devices are selected.

Foreground

The proposed new Satellite Laser Ranging instrument has been designed as a ***universal telescope platform*** for:

- Educational (various technical application training) and
- Research (new technology and application research) purposes.

The proposed ***telescope platform*** is designed for use in stationary environment and as mobile system with complete hardware (including multi-laser system for different ranging applications) into a standard 20' (40') sea container with a telescope mounted in the temporary assembled pavilion on the roof of container.

The proposed new SLR instrument is designed for ***multi-object*** ranging allowing better use of instrument resources in time close to ***24h/7wd***.

Telescope EGLE model (scale 1:10)



Development objectives

The SLR telescope platform is designed for main applications:

- High precision ranging the satellites equipped with retroreflecting prisms
- Ranging space objects with light dispersed surfaces including Low Earth orbit - LEO, nano and micro satellites, for example CubeSat, space debris and others low flying platforms as airplanes, balloons, rockets and others with or without retro emitting elements
- Ranging experiments with dangerous far Space objects (crossing the Earth orbit) with high pulse energy laser and large aperture telescopes as receivers
- Ranging experiments with femto second lasers for increasing the distance accuracy measurements
- Lidar (atmospheric composition studies) experiments with a wide spectral range radiation sources
- Point-to point space communication link experiments as a ground station terminal or other optical long-haul communications links

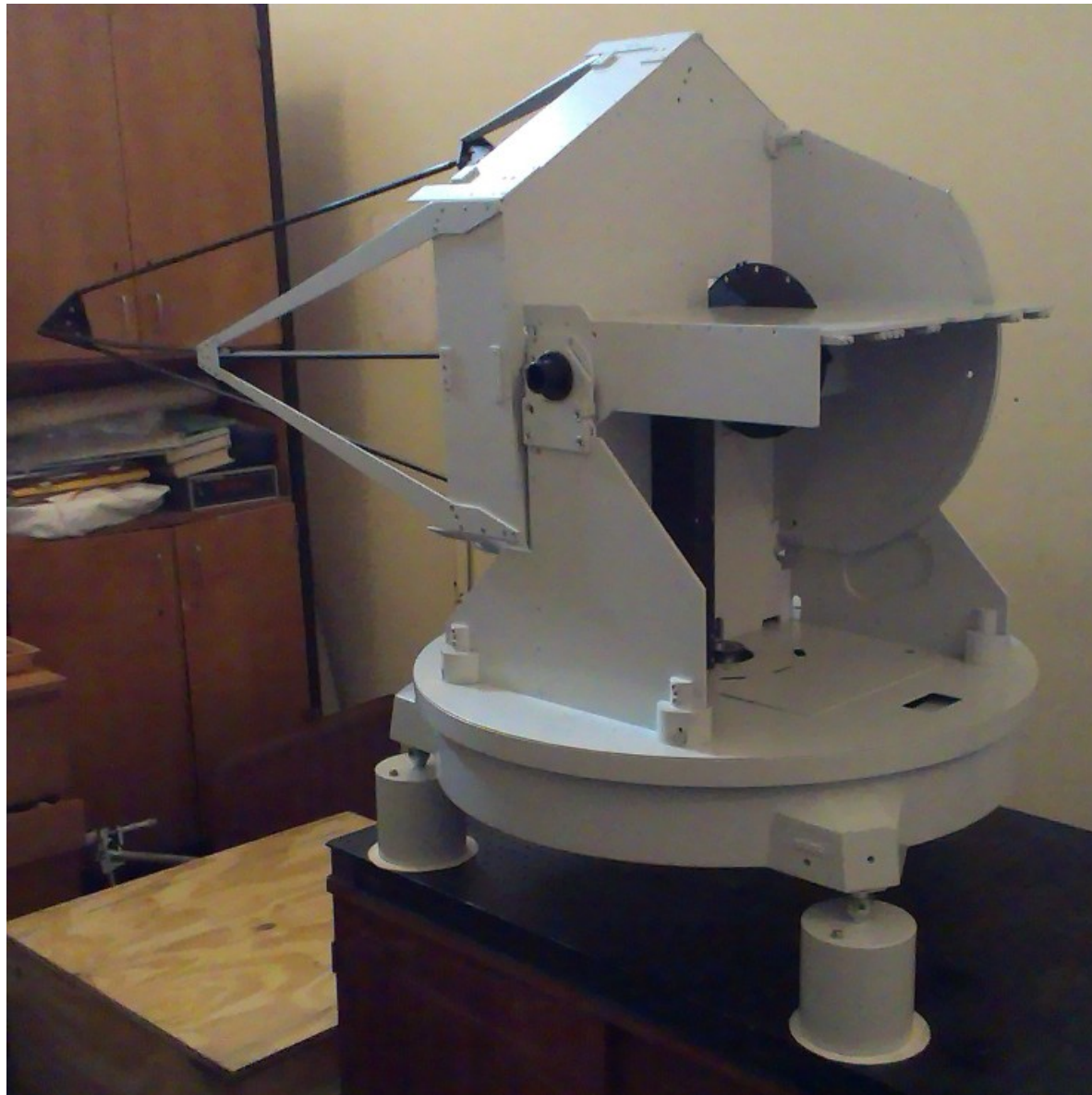
The main mirror (D620)



Telescope EGLE (vertical view)



Telescope EGLE (horizontal view 1)



Telescope EGLE (horizontal view 2)



Thank you for attention !