

List of events and dates of major developments at Helwan SLR- station

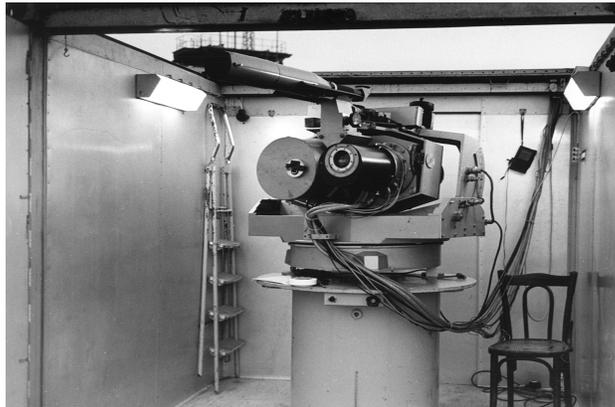
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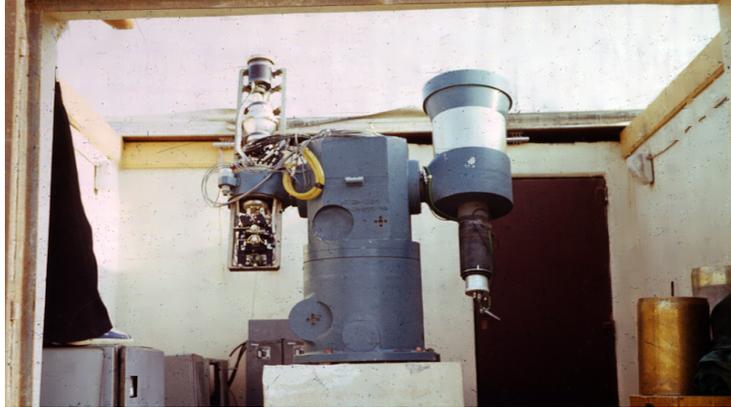
National Research Institute of Astronomy and Geophysics (NRIAG)

- The station was established in 1974 into InterKosmos framework.
The first generation station (with visual tracking) was a mobile container with ruby laser, astronomical mount, control electronics and commercial computer HP 9830A, HP Cesium clock 5360, PMT RCA 8852.



The container of the visual tracking station.

- In 1978, the time base was upgraded to LORAN C and telex communication channel was established, thanks to Smithsonian Astrophysical Observatory (USA) for grant funding. This mobile station operated till the end of 1980.
- In February 1982, due to the cooperation between the Czech Technical University in Prague and the National Research Institute of Astronomy and Geophysics in Egypt, the second generation SLR station has been completed and activated into new building. It is consisting of mount, Nd:YAG laser, control electronics and commercial control computer HP 2100S. It was the first full blind tracking SLR station in the world.



The second generation station in new building.

- In 1987 the laser system changed again to mode-locked Nd:YAG with coude beam delivery system. In 1989 a control electronics was completely upgraded and SLR station Helwan was the first fully personal-computer-controlled in the world.



The telescope of the blind tracking station (left) and the Coude laser system.

- Since 1990 the time subsystem is based on GPS system, and since 1991 the communication and data transfer is provided by EARN/Bitnet computer network, later on Internet.
- Since 1992 the SLR station Helwan a part of [Eurolas](#) network (since 1998 [ILRS](#), network ID 7831). Since 1997, it is operated by local operators. Since 2004 a stable cable internet connection in station building is established.

- Since 2005, configuration of station is based on Nd:YAG laser (20 ps FWHM, 80 mJ at 532 nm) delivered by coude to Keplerian mount with two telescopes, Hamamatsu 6533 PMT, time counter Stanford 620, control electronics, time base HP 58503B, meteo Paroscientific Digiquartz Met3, and PC-based control and data processing software (IRV & polynomial fit).



Helwan- SLR station (ID : 7831).

- Since 2005, the Czech participation and as a consequence the utilization of existing both tangible and intangible investments is allowed exclusively by support of the Czech science Foundation by the grant GA205/05/0110 managed by Dr. Antonin Novtony.