The Konkoly Meteor Observing Network (KoMON)

Antal Igaz, Gergely Csépány, Nándor Opitz, Krisztián Sárneczky, and László Kiss

MTA CSFK, Konkoly Observatory, Budapest, Hungary

The Konkoly Observatory

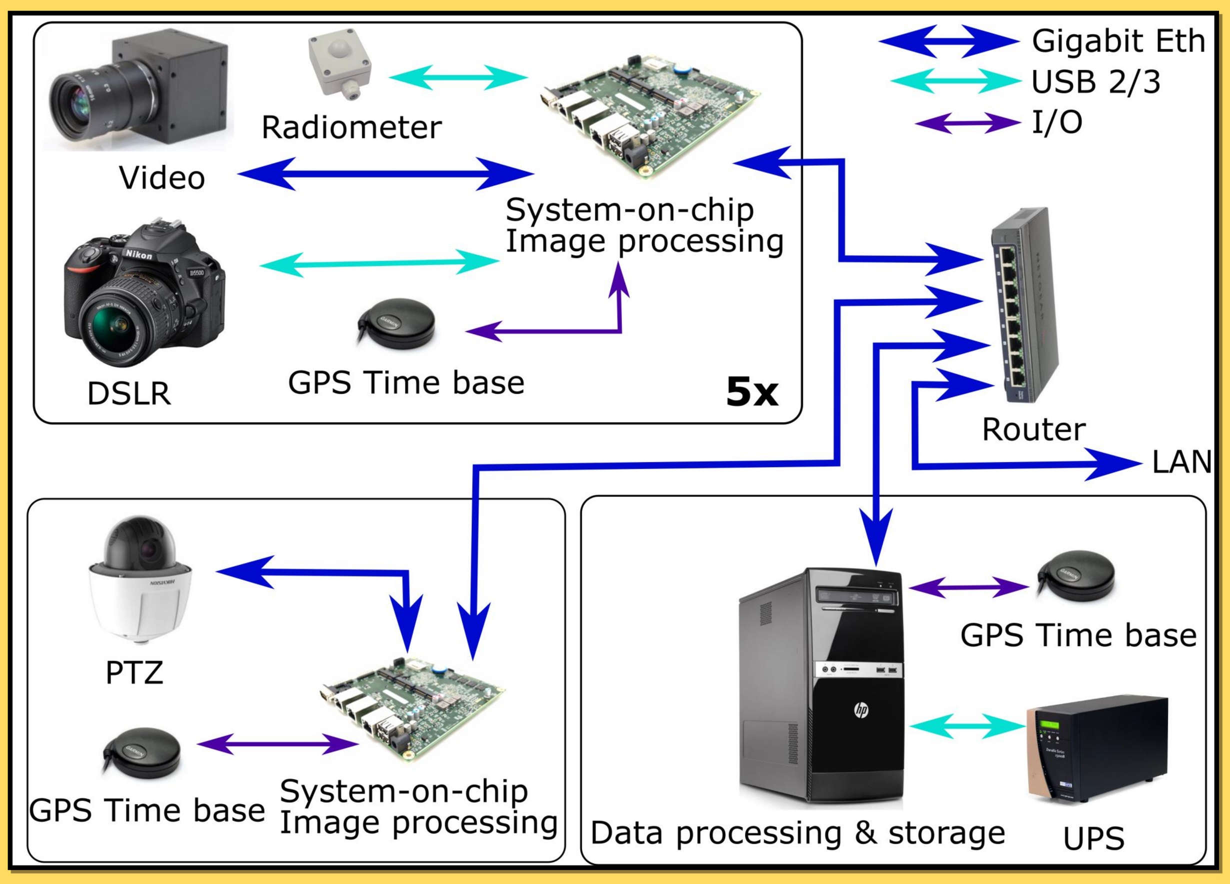
The Konkoly Observatory, located in Budapest was founded in 1899, when Miklós Konkoly Thege donated his private observatory to the state. Konkoly observed many comets and meteor showers visually and spectroscopically as well and concluded the close correlation between comets and meteors according to their chemical composition. He was the discoverer of two famous meteor showers Kappa Cygnids, and Alpha Capricornids. In late 2016 we got 3.1M EUR funding from the Hungarian National Research, Development and Innovation Office, for the four-years long project „GINOP-2.3.2-15-2016-00003 Kozmikus hatások és kockázatok" - Cosmic effects and risks.

Cosmic effects and risks

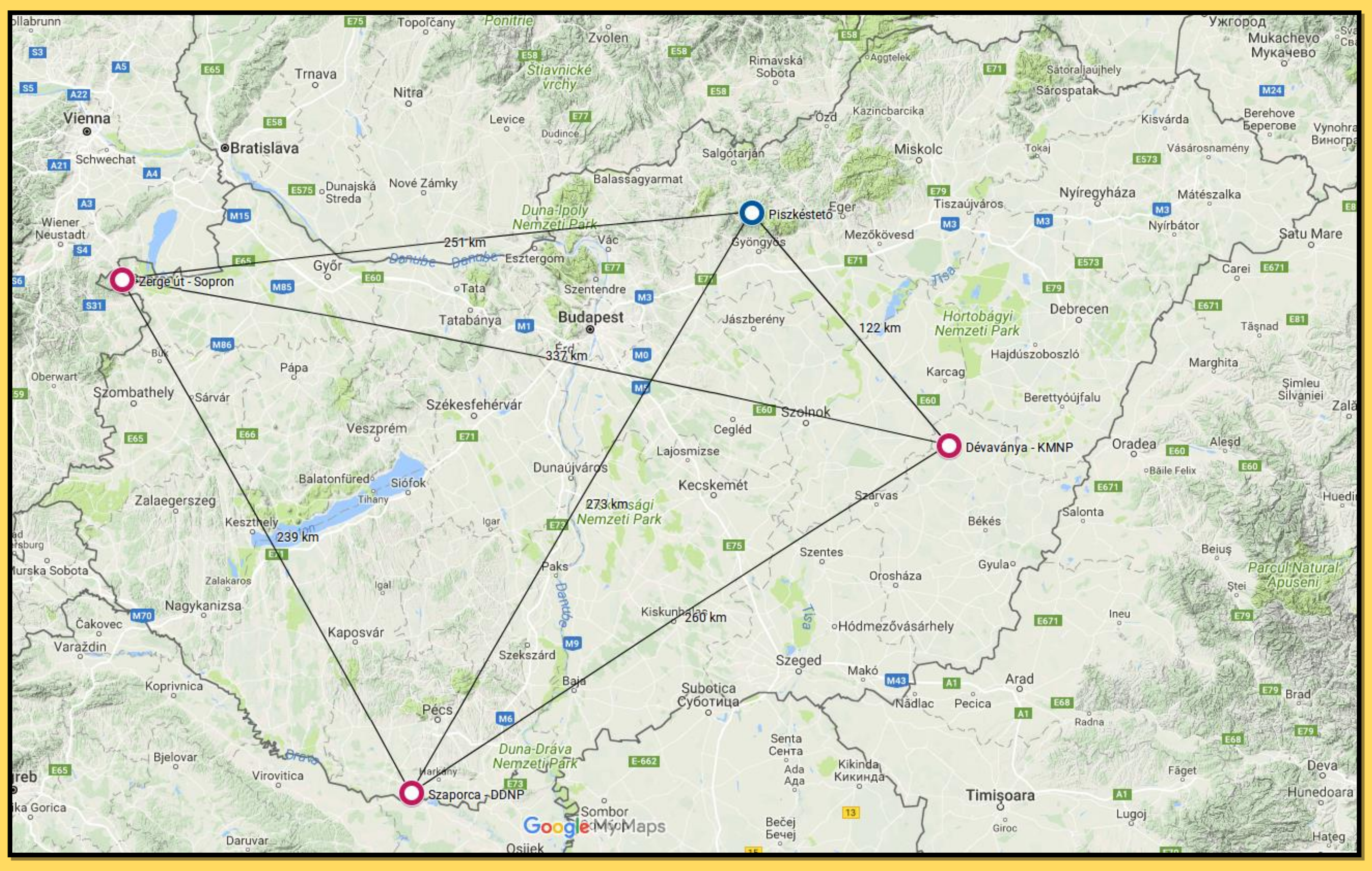
This project deals with observational studies of small bodies in the Solar System that approache the Earth and have the potential of impacting our planet: (1) we discover, confirm and characterize near-Earth asteroids using 0.6-1 m telescopes of the Piszkéstető Mountain Station of the Konkoly Observatory; (2) we develop and build a network of dedicated meteor cameras for measuring the accurate orbits of bright fireballs; (3) we utilize the most advanced digital ionosonde techniques to complement optical meteor observations with radar measurements; (4) by building the most sensitive system for detecting lunar impacts we characterize the impactor population.

KoMON

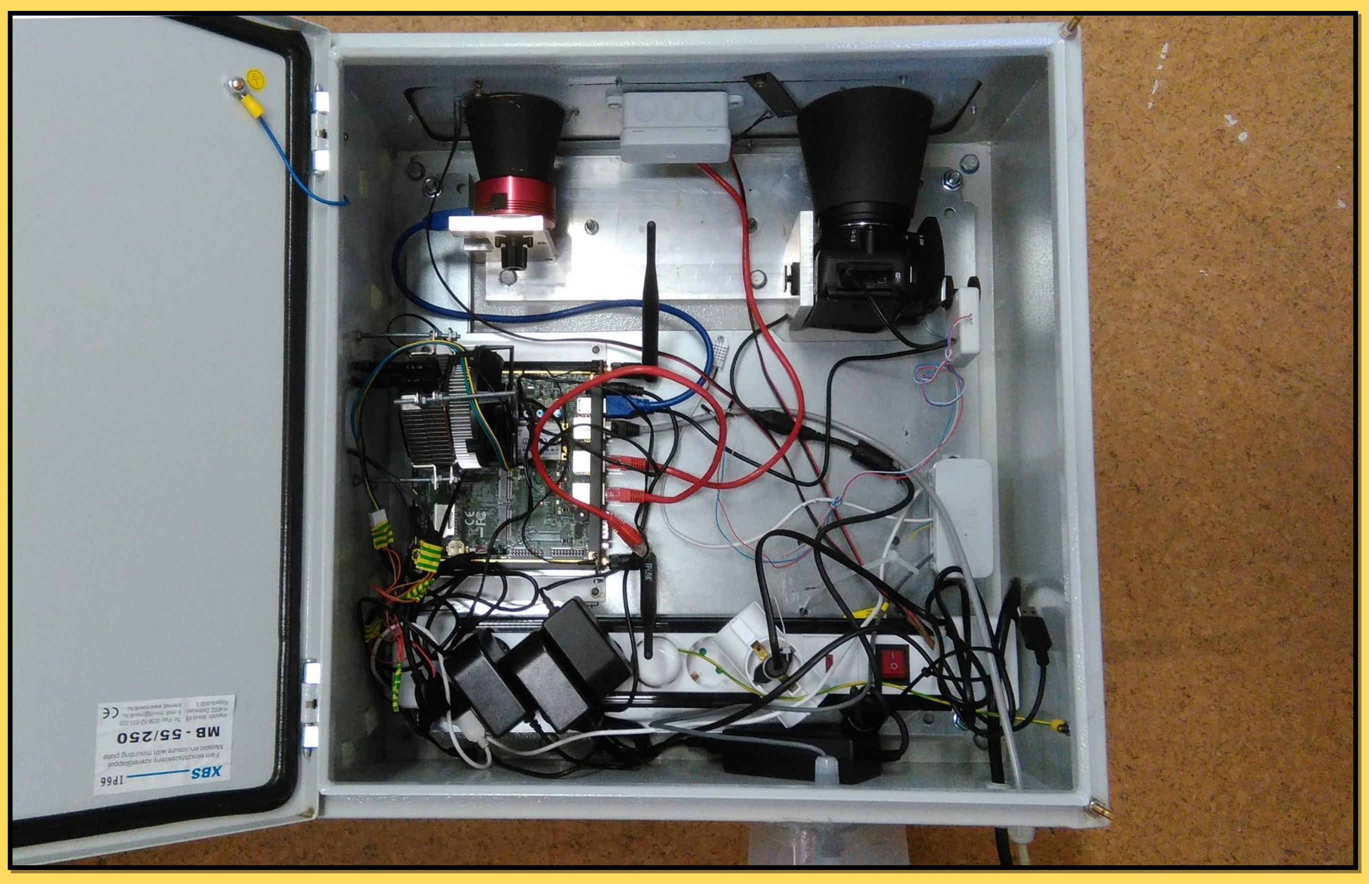
Scientific aims: record even brightest fireballs; high spatial resolution and high temporal resolution at the same time; observations of daytime fireballs; fragmentation processes in high resolution; meteorite recovery; sound and high temporal resolution lightcurve detection.
Detectors: Nikon D5500 camera + LCD shutter with 90 deg FOV; GigE video camera with 90 deg FOV; fast reaction pan-tilt security camera; radiometer and sound detector.
Sites: astronomical observatories; National Parks with dark sky; geodesic, transmission, and GSM towers far from rural areas.
Millestones: engeneering mode: 2018 June; scientific mode: 2019 January.



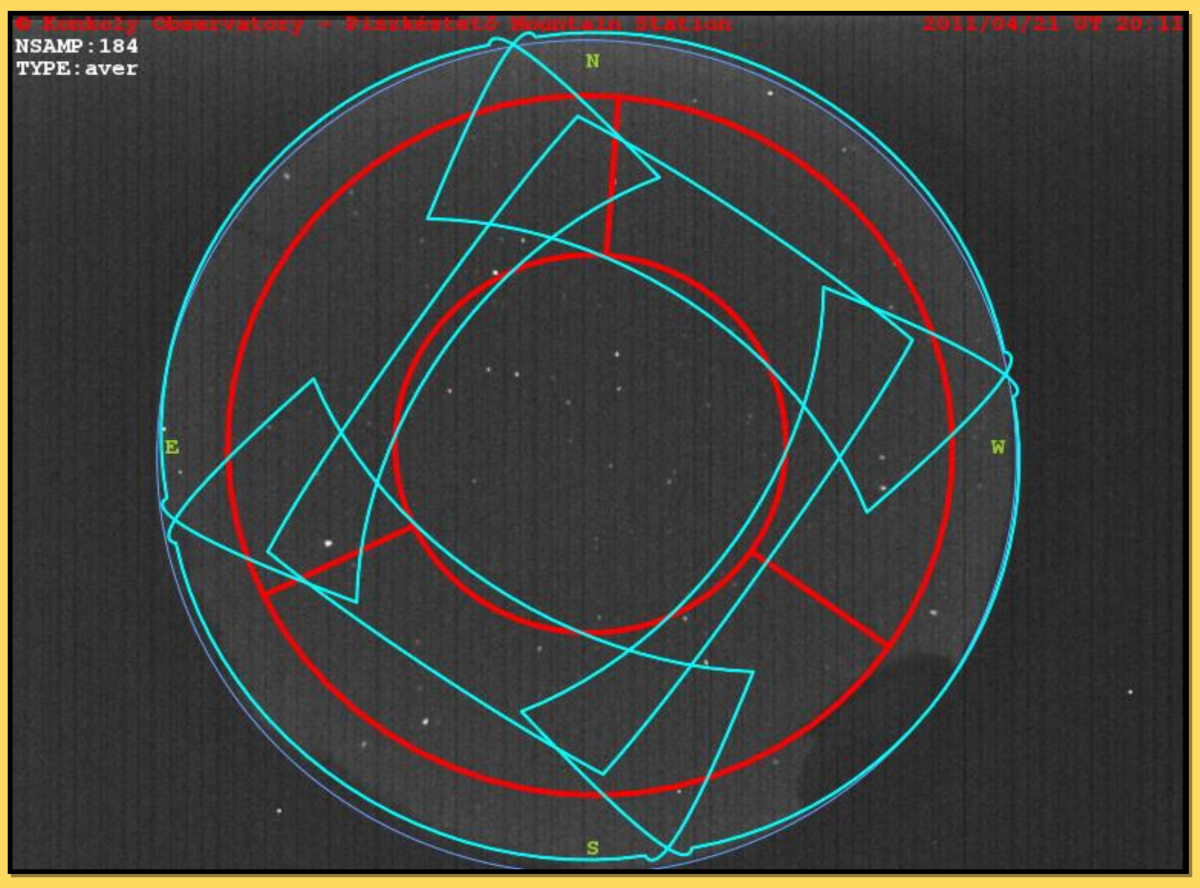
System diagram: five optical units (video + DSLR), one fast reaction camera, and a data processing and storage unit



Planned locations for KoMON stations: Piszkéstető Observatory, a geodesic tower near Sopron, and two national parks.



Inner view of the prototype of the planned optical unit, including a video and DSRL camera, cooling, sensors and a simple in-place data processing board



Planned field of view (cyan squares) of the optical units

Contact:

Gergely Csépány
csepany.gergely@csfk.mta.hu

Future plans:

In the next step we will build the first optical unit with the final parts in the final size, and will benchmark and tune the software to detect meteorites in the coming months. Further down the down, we will assemble the first station with five optical units and the fast reaction unit at Piszkéstető, expected around spring 2018. The final step will be to assemble and install all the four stations nationwide by the end of 2018.

Acknowledgements:

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