

Visits to GSCAN/Tartu Observatory

Friday 1 September 2023 11:30 (1h 30m)

Field trip to GScan

GScan is a company near Tartu that is redefining the boundaries of 3D scanning with Muon Flux Technology (MFT) detectors.

GScan is using naturally occurring cosmic-ray induced muons, electrons and positrons as the source for performing 3D scanning and chemical composition analysis. Utilising a natural source makes every GScan system radiation safe - no harm to the surrounding people nor the environment itself. Their solutions are modular and highly-scalable, using the in-house developed 1m x 2m detector array modules. With a strong base of startup mindset, fundamental and information sciences, a highly modern manufacturing industry, coupled with high work ethics coming from Estonia has provided us with a strong competitive edge for developing such a complex technology.

Field trip to Tartu Observatory

Tartu Observatory is an Estonian space centre whose main task is research and development. They train young scientists in astronomy, remote sensing, and space technology, and are a recognised partner in international networks. Tartu Observatory has accredited test laboratories where companies can test their equipment in different environmental conditions. The laboratory complex of the observatory offers environmental testing of devices and optical measurements. The laboratories include special electrostatic discharge (ESD) safe areas, a cleanroom and an anechoic environment.

Tartu Observatory's history goes back to the 19th century when the Tartu Old Observatory (Tartu Tähetorn) was built. There, astronomer F. G. W. Struve created the meridian arc to determine the shape and size of the globe, this geodetic arc is listed under UNESCO World Heritage. In the mid 20th century scientists led by Einasto discovered the honeycomb-like structure of the universe.

We'll visit the laboratories, have mini lecture about data gathering and science in soviet times and of course visit the big telescope (1.5 m mirror telescope AZT-12 with a long-slit spectrograph in the Cassegrain focus, providing spectral resolution of $R \sim 100$ to 12000).