GP 7: Instruments and Exhibitions

Time: Wednesday 14:00–16:00 Location: ELP 3: HS 2.33

GP 7.1 Wed 14:00 ELP 3: HS 2.33

On a 17th Century Telescope Lens Grinding Machine — •Wolfgang Engels — HistEx GmbH, Germany, Marie-Curie-Str. 1, 26129 Oldenburg

Some years ago, a telescope was discovered during excavations in Delft that could originate from the first half of the 17th century. The instrument is suggested to represent a surviving sample of one of the oldest in the Netherlands. The principle of these terrestrial telescopes is the use of a planoconvex objective lens and a planoconcave eyepiece. Surprisingly, the very unusual shape of the planoconvex objective lens of the find corresponds nicely to a grinding method that was suggested by the Capuchin monk Anton Maria Schyrleus of Rheita in 1645 (Oculus Enoch et Eliae...). The polished curvature of the actual objective lens is centred on a piece of flat glass from which it was cut, leaving the surrounding edge rough and unpolished. Rheita claimed that his apparatus was designed to machine both spherical and hyperbolic planoconvex lenses. Based upon Rheita's publication, the machine has been replicated and some lenses have been produced. To date, no finds of early aspherical lenses are known, but further finds of spherical lenses with the typical shape now indicate that Rheita's processing method could have been used on a large scale.

GP 7.2 Wed 14:30 ELP 3: HS 2.33

's Gravesande's parabola - when motion becomes tangible — •Linnéa Bergsträsser — Institute of physics, its didactics and its history, Flensburg, Germany

In the 18th century, Willem Jacob 's Gravesande mentioned an apparatus that was supposed to visualise the flight path of a heavy body. A marble rolls down a ramp and exits in a horizontal direction. The interaction of this horizontal movement with the accelerating force of gravity creates the motion curve of the marble: The parabola. As this flight motion is far too fast for the human eye, 's Gravesande came up with an idea: first with steps, later with rings, he was able to visualise the marble's flight. This apparatus was a typical mechanical demonstration experiment from the 18th century.

At this time Galileis and Newtons mechanics were very popular and I will show the link between Galileis and Newtons mechanics and 's Gravesandes demonstration of motion.

At the Europa-Universität Flensburg, we have a reconstruction of the respective apparatus kept at the Museum Boerhaave. As part of my PhD project, I am working with this device and I analyse the accuracy of this demonstration experiment.

In working with this device, the key function of the instrument is that the ball moves through the rings. To ensure this, I had to learn to work with all my senses and not just trust my eyes. This was also the challenge for demonstrators in the 18th century. They needed to develop a certain way of dealing with demonstration experiments before they showing them to the students in the lectures.

GP 7.3 Wed 15:00 ELP 3: HS 2.33

Light and Matter - Insights into exhibiting quantum optics at the Deutsches Museum — •Katharina Stuhrberg — Deutsches Museum, Munich

For the year 2024, the Deutsches Museum is developing an exhibition on quantum optics with the title "Light and Matter". The new exhibit covers the subjects of quantum physics, lasers and spectroscopy in their historical context. A variety of hands-on demonstrations, objects, as well as "Szenoramas" - a new form of artistic storytelling - are deployed in our exhibition to make quantum physics, optics and their history accessible for all visitors of various backgrounds that come to the Deutsches Museum. This talk will outline the exhibition's concept and discuss how quantum optics and its historical background will be introduced to the public.

GP 7.4 Wed 15:30 ELP 3: HS 2.33

Two Astrolabic Quadrants from 14th Century Damascus and 17th Century London — •Enes Tepe — Europa Universität Flensburg. Institute for Physics, its Didactics and its History. Auf dem Campus 1, 24943 Flensburg, Germany

In the previous (virtual) history of physics DPG conference in Heidelberg, I presented my study about different portable quadrant traditions in the Islamic World and the Western Europe. One of the conclusions of that study was that the astrolabic quadrants from astronomers and instrument-makers of Mamluk and Stuart dynasties can be considered among the most well-founded timekeeping instruments of their respective cultures. In my PhD project, I am researching the practices with two astrolabic quadrants from these periods according to the replication method. One of the instruments is an almucantars / trigonometric quadrant that was made by Muhammad ibn Ahmad al-Mizzi in 1329, Damascus, and now exhibited in David Collection, Copenhagen. The other one is a large quadrant of inverse projection that was made by Henry Sutton in 1658, London, and now kept in the History of Science Museum, Oxford. At the current phase of the project, I am reconstructing these two instruments with the necessary adaptations to 2024 and Flensburg in order to be able to analyze the practices based on their re-enactments. In this talk, I am going to introduce the two astrolabic quadrants and make a comparison of their general features.