GP 2: History and Teaching

Chair: Arianna Borrelli

Time: Monday 15:30–16:30 Location: GP-H7

GP 2.1 Mon 15:30 GP-H7

Transformations: On the relation between research experiments and teaching demonstrations — •Peter Heering — Europa-Universität Flensburg

Some experiments from the history of physics were so relevant that they were not only included in textbooks, but also found their way into (university) physics education as teaching demonstrations. The instruments developed for this purpose can be found in a number of museum collections, whereby frequently hardly any differentiation is made between teaching devices and research instruments. However, a somewhat closer analysis of the instruments and the practice associated with them makes it clear that significant differences can be found here. In the context of this paper, I am going to discuss some aspects of such demonstration devices that prove relevant precisely in distinguishing them from the corresponding experimental instruments and the practices associated with them.

GP 2.2 Mon 15:50 GP-H7

Bringing some light into the dark and some darkness into light: Young's double-slit experiment (1807) — •Michelle Mercier — Europa-Universität Flensburg

In 1807, Thomas Young published the description of an experiment that is nowadays canonized as Young's double-slit experiment. Today, the basic principle of the experiment is well-known, however, the experiment performed by Young is not. And if one goes back to the initial description, his text is difficult to understand and leaves several questions unanswered both in respect to the details of the apparatus he used and the exact observations in his experiment.

As part of my PhD project, Young's double-slit experiment is analyzed by using the replication method. In this talk, I will describe the experiences made (experimentally) and focus in particular on the difficulties in observing as well as documenting and communicating what is seen. The meaning of the experiences made for the understanding of Young's description of the experiment will be discussed in conclusion.

GP 2.3 Mon 16:10 GP-H7

Garavito s work in Colombia on the theory of light aberration: some didactic reflections for the teaching of physics — •Lisbeth Alvarado-Guzman[1,2], Isabel Malaquias[2], and Roberto Nardi[1] — [1]São Paulo State University (Unesp), School of Sciences, Bauru, Brazil — [2]University of Aveiro (UA), Dep. Physics, CIDTFF, Aveiro, Portugal

This article aims to recognize some elements about the scientific research developed in Colombia at the beginning of the 20th century and the communication with the international scientific community of the time. Julio Garavito Armero s (1865-1920) original article on the theory of light aberration (1912) is taken as a paradigmatic example and with didactic interest. He was the first professor of mathematics (Arboleda, 2021), graduated as an engineer, also director of the Astronomical Observatory in Colombia (1893-1919). From the original article, the problem Garavito addresses was the one proposed by the astronomer David Gill (1843-1914) in 1896: if one may consider as exact the generally accepted theory of aberration. Garavito concluded that the annual aberration constant was correct and considered incorrect Huygens interpretation of the superposition of waves effect, using the analogy of water waves (Lleras, 1915). To conclude, the problem addressed by Garavito can have a special interest in the teaching of Physics and Astronomy context from: 1) the analysis of the phenomenon of aberration of light as an argument in favor of Earth s motion; 2) questions on the nature of science connected with the communication by and between researchers.