

Students of the International Master course visited the Deutsches Elektronen Synchrotron, DESY.

A group of 8 students from the international master course made end of January 2023 a trip to DESY (Deutsches Elektronen Synchrotron) in Zeuthen (Brandenburg).

DESY is one of the world's leading research centres. Its research focuses on decoding the structure and function of matter, from the smallest particles of the universe to the building blocks of life.

In the first part of the visit, Dr. Maria Krause, a former student of the Brandenburg University of Technology, gave a survey of the research in astro-particle physics. The highlights were the detection of high-energy gamma rays in the Cerenkov telescopes H.E.S.S. (Namibia), MAGIC (La Palma) and VERITAS (Arizona, US). Such telescopes allows one to discover and explore particle accelerators in the universe, a cornerstone in understanding cosmic rays. Following that, an in-depth description was given of the current research program in the Cerenkov Telescope Array, CTA.

From Dr. Maria Krause's talk the students got an insight in how telescopes are constructed, how the size of telescope is determined and how the locations for the telescopes are selected.

The second part was a visit of the electron accelerator, PITZ (The Photo Injector Test Facility at DESY, Zeuthen). Dr. Anne Oppelt explained how electrons are released from a photocathode using laser pulses, how they are accelerated, optimized, and used to produce laser light in the terahertz frequency range or for irradiation experiments to improve cancer treatment possibilities. We discussed the current investigations at PITZ for defining the parameter range in terms of dose rate distributions for a new type of cancer treatment.

The trip raised many interesting topics for physics research opportunities of master students and supplemented as a more practical part the lectures of the Module "Particle and Astroparticle Physics " that is offered by Prof. Wolfgang Lohmann in the BTU.

The visit was perfect for encouraging further interest in research possibilities and gaining a deeper understanding of the research program at DESY.

We are very appreciative of Prof. Lohmann for preparing such an interesting practical and scientific visit, and we really appreciate the impressive presentations given by Dr. Anne Oppelt and Dr. Maria Krause, comprising very valuable informations for the master students.

