



### III. International Seminar

# Material Culture in the History of Physics

## Funded by the W. & E. Heraeus Foundation

#### **What is meant by ‘material culture’?**

Usually historians work in archives with historical documents trying to reconstruct theories or the social and cultural context of physics. But not everything about physics’ history is written in the documents. Therefore, we try to access new levels of knowledge by analyzing 3d-objects and documents. Including the material aspects of science in the historical narrative can greatly enrich our knowledge about the way science works. We will introduce you to some standard approaches, such as the Winterthur model, to analyzing unknown objects. This model may be extended by considering the biography of the object, which changes in meaning over its lifetime. Another approach to acquiring more information about practical knowledge not written in documents is the historical reconstruction of experiments. We will also practice communicating to wider audiences about the material side of scientific knowledge by planning a small exhibition of selected objects.

#### **Who may participate?**

Master and graduate students of the following fields: History of Science, Physics, Didactics of Physics, as well as trainees in science museums. A strong historical interest is the prerequisite for consideration.

#### **Where does it take place?**

The seminar includes an online component at the beginning and attendance section at the Deutsches Museum in Munich.

#### **When does it start?**

The online section starts on January 15<sup>th</sup>, 2019, and the attendance section in Munich extends five days from February 18<sup>th</sup> to 22<sup>nd</sup>, 2019.

#### **ECTS and Workload:**

The workload is 300h, what means that students earn 10 ECTS in the case of a successful participation. They will get a certificate, which allows the transfer of credits to their home university.

#### **Modul examination:**

The module examination is an individual essay with 25.000 – 30.000 characters. The essay is due June 1<sup>st</sup>.

#### **How to apply?**

Please send a short CV and a letter explaining why you want to take part in the workshop in one PDF file (one page) to [christian.forstner@uni-jena.de](mailto:christian.forstner@uni-jena.de) before December 15<sup>th</sup>, 2018.

#### **What is funded?**

The support of the Heraeus foundation covers bed and breakfast (four nights) at the Kerschensteiner Kolleg in Munich, as well as travel expenses up to 80€ for participants from Germany, and up to 300 € for students from abroad.

## Lecturers:

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## Structure and Content of the Seminar

The seminar is divided in three sections: a theoretical part, a practical section, and individual follow-up work.

### *Theoretical Section (Workload 130h)*

Using the e-learning platform moodle at Europa-Universität Flensburg students will explore the theoretical concepts that form the basis of our seminar: The Winterthur model, the biography of objects, and experimental history of physics. The students will be organized in groups and prepare presentations of their findings on one of the three theoretical approaches. These presentations will be discussed on the first day of the attendance section at the Deutsches Museum in Munich.

### *Practical Section (Workload 40h)*

The practical part of the seminar requires one week of attendance at the Deutsches Museum in Munich. At the beginning we will discuss the different theoretical approaches on the basis of the student's presentations.

After the theoretical discussions we will focus on the material objects. During the seminar there will be sessions on historical instruments as well as practical activities towards experimental history of science. In doing so, the participants will be familiarized with different approaches to scientific instruments and the related scientific practices. Preservation and restoration of objects is part of the seminar as well. Therefore, we will visit the restoration workshop of the Deutsches Museum. Visiting one of the exhibitions of the museum we will also discuss display concepts. At the end of the seminar to the participants will explore an unknown object using the Winterthur model at first, and then going on to write a biography of the object which forms the essay that serves as examination. And participants will brainstorm about themes for potential museum exhibitions that could display one or more of these objects.

### *Follow-Up Section (Workload 130h)*

In the follow-up of the seminar the students reflect on the experiences they made during the seminar. Therefore, they write biography of one of the objects that were examined by them on the last day of the seminar.