TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Physics

PHYSICS COLLOQUIUM

and GET-TOGETHER

Speaker: **Prof. Sergej Faletič**
Faculty of Mathematics and Physics
University of Ljubljana

Topic: **Rubrics as an assessment tool for laboratory work**

Time and place: Tuesday, June 17, 2025, **2:50 pm** – hybrid event
The colloquium will be held in REC/C213.
Online participation possible:
Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-SoSe25
https://tu-dresden.zoom-x.de/j/63138178900?pwd=TlmGawPz1dtDA6VzO2N1XdqqI7bE6b.1

Host: Dr. Sebastian Schellhammer

Abstract: At the University of Ljubljana Faculty of Mathematics and Physics (UL FMF) we reformed the Applied Physics program. We chose the Investigative Science Learning Environment (ISLE) as our framework, which emphasizes learning physics by doing physics. It includes student-centred lessons, problem-solving sessions and laboratories. In this talk, I will focus on the laboratories. In the ISLE framework, experiments take one of three roles: observational, testing or application. Each have their own characteristics and develop their own set of scientific abilities. To assess these abilities, rubrics have been developed at Rutgers University. Rubrics are tables where lines represent specific elements to be assessed and columns represent degrees of adequacy of each element. The cells contain descriptors that identify levels of adequacy. While rubrics can be used for assessment only, the Rutgers Scientific Abilities Rubrics (RSA rubrics) have been specifically developed also for self-assessment and feedback to students. This requires research-based descriptors that students can successfully use to improve their own abilities. At UL FMF we first introduced the RSA rubrics in 2015 in Project Laboratory course, in which students solve one open-ended project over the course of a semester. We now introduced the rubrics also to the laboratory work in the Applied Physics program. In the talk I will present examples of what Project laboratory tasks look like, what Applied Physics laboratory tasks look like, and how rubrics are used in each case. Furthermore, I will present some research findings on the efficiency of using rubrics for assessment and feedback.

Bio: Sergej Faletič is assistant professor at University of Ljubljana Faculty of Mathematics and Physics. He studied physics in Ljubljana and obtained his PhD in physics in the topic of nuclear magnetic resonance. Already during his studies, he began research in physics education. He completed a

post-doctoral research fellowship with prof. Marisa Michelini at the University of Udine. His research is mainly in the field of effective laboratory work and experiment-based learning in the 21st century, and in the teaching and learning of quantum physics at pre-university level. He is actively involved in the preparation of pre-service and in-service physics teachers at the University of Ljubljana.

Get-Together:

The colloquium will be followed directly by a Get-Together with Prof. Sergej Faletič in REC/B101 (around 4:00 p.m.). All students and staff are invited to talk to the speaker and discuss perspectives on the academic career, work-life balance and the professional life as a scientist.