TECHNISCHE UNIVERSITÄT
BERGAKADEMIE FREIBERG
Die Ressourcenuniversität. Seit 1765.

J.-Prof. Dr.-Ing. Christian Kupsch
Juniorprofessur für Mess- Sensor- und Eingebettete Systeme (MSE Lab)

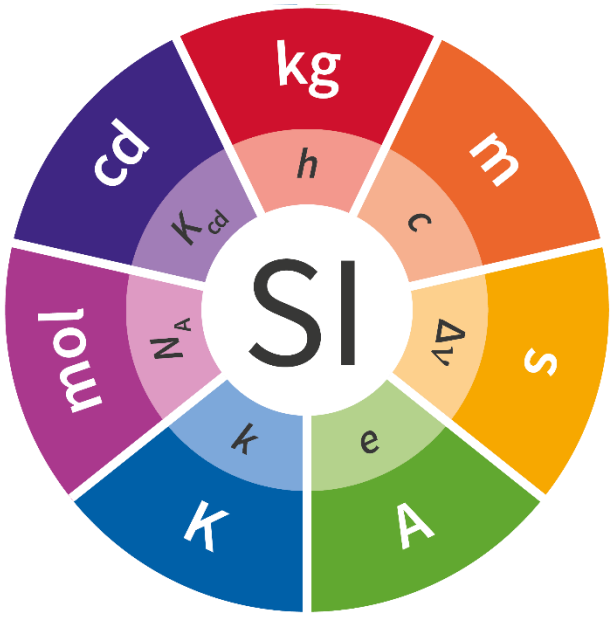
Prof. Dr.-Ing. Sebastian Zug
Professur für Softwaretechnologie und Robotik

Invitation to Project Seminar Measurement,
Sensor and Embedded Systems

The new International System of Units (SI) - now approachable for extraterrestrials and nonhumans

Abstract:

The establishment of the international system of units “SI” facilitates many areas of our lives almost unnoticed. The lecture provides an insight from the first ideas that led to the introduction of weights and measures of length to the “birth” of the SI system of units. In addition, the example of mass is used to explain why, since the “little revolution” on May 20, 2019, the SI system of units has been based on fundamental constants such as the Planck constant and why almost all quantities are based on quantum standards.



Speaker: Dr.-Ing. Prof. h. c. Frank Härtig, Vice President Physikalisch-Technische Bundesanstalt, Nationales Metrologieinstitut

Place: Zentrum für effiziente Hochtemperatur-Stoffwandlung (ZeHS), Room EG 133 (Conference room ground floor)

Date: 9.1.2025, 2.30 pm to 4 pm

Audience: All interested members of TUBAF and external guests

Lecture language: English

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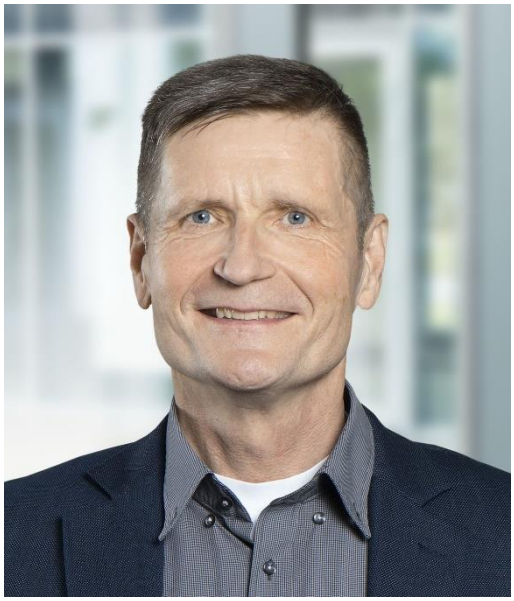
Curriculum vitae Dr. Prof. h. c. Frank Härtig



Frank Härtig graduated from the Technical University of Karlsruhe, Germany, with a Diplom-Ingenieur degree in mechanical engineering. After that he was employed as a development engineer in the field of coordinate measuring technology. This highly scientific work was the basis of his doctoral thesis, which he in turn completed at the Technical University of Karlsruhe. He subsequently worked for several leading companies in the field of coordinate measuring technology, specializing in geometrical metrology. Since 1999 Dr. Härtig has worked at the National Metrology Institute of Germany, the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig. The main focus of his work there has been the development of the virtual coordinate measuring machine (VCMM), which is known as one of the first digital twins in the field of length measuring technology. The VCMM has been used successfully in industry for over 25 years and has long been accepted by the German Accreditation Body. His work on the online validation of evaluation algorithms has been no less successful. This service can be used worldwide under the name of TraCIM. Between 2010 and 2012 he was awarded a guest professorship at the Beijing University of Technology. In 2014 he became the head of PTB's Mechanics and Acoustics Division with more than 150 employees. In 2016 he was appointed as an honorary professor at the Harbin Technical University, China. During this time he became a guest professor at Beijing University for a second period of two years. Parallel to that, one of his key activities lay in the global revision of the SI. One special focus was on the realization of the unit of mass based on the XRCD-method and later centering on the development of the so-called Planck Balance as well. In May 2020 he became Vice President of PTB. Along with many other tasks within the Presidential Board, his scientific focus lies in the area of digitalization. He is involved in the definition and global development of metadata formats, the establishment of digital metrological twins and the advancement of a digital quality infrastructure. Dr. Härtig maintains extensive contacts with industry and scientific institutions. He heads the Conformity Assessment Body of PTB and holds several other responsibilities. Between 2021 and 2024 he was President of the International Metrology Confederation (IMEKO). In 2024 he became President of the Advisory Board for IMEKO.