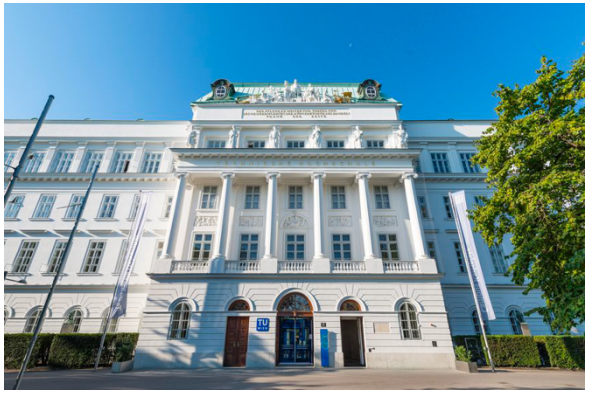
TECHNISCHE UNIVERSITÄT WIEN



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Physics Colloquium TU Wien

27. January 2025
16:15
Freihaus,
Nöbauer Hörsaal (HS8)
Wiedner Hauptstraße 8-10

COLLOQUIUM LECTURE ON THE NOBEL PRIZE IN PHYSICS 2024

Physical Learning Machines

Florian Marquardt

Max Planck Institute for the Science of Light, Friedrich-Alexander-Universität Erlangen-Nürnberg

Machine learning and artificial intelligence are revolutionizing science and technology. However, the ever-increasing resource requirements for training powerful deep neural networks, such as large-language models, are on an unsustainable trajectory. For this reason, a community of researchers is urgently looking for alternatives to digital neural networks: physics-based hardware platforms that can be trained just like neural networks but that are potentially much more energy-efficient. In this talk, I will focus on our ideas for the physics-based training of such learning machines.

A buffet will be offered at 15:45

Prof. Florian Marquardt studied physics in Bayreuth. In 2002, he defended his PhD thesis at the university of Basel, Switzerland. From there he moved to Yale University, USA, where he was a postdoctoral fellow (2003-2005). Returning to Germany in 2005, he became a junior professor and Emmy-Noether group leader at the Ludwig-Maximilians University Munich. Having been appointed to full professor in 2010 at the Friedrich-Alexander University Erlangen-Nuremberg, he joined the Max Planck Institute for the Science of Light (MPL) as a director as of August 2016.Prof. Dr. Florian Marquardt is director and scientific member at the Max Planck Institute for the Science of Light, Erlangen