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## Daniel Varela Magalhães

### Presentation: Atomic Standards of Time and Frequency and timekeeping applications

#### Abstract

Time and frequency atomic references have been used as the fundamental standards for several applications in our daily lives. From basic research, aimed at studying fundamental constants, to applications such as geolocation systems, these references are part of our routine in areas that we sometimes do not imagine. This presentation will give an overview of the field, showing the current state-of-the-art and discussing some applications, like remote comparisons, time transfer and their needs and limitations.

#### Biography

Daniel Varela Magalhães is an associate professor at the São Carlos Institute of Physics of the University of São Paulo (IFSC-USP). Graduated in Electrical Engineering and DSc in Applied Physics, he worked from 2000 to 2008 as a Research Engineer in the Optics Group of the São Carlos Institute of Physics (IFSC-USP), also as a Invited Researcher at the Paris Observatory in 2006 working with Optical Frequency Standards with Dr. Sebastien Bize. From 2008 to 2022 he was a faculty member at São Carlos School of Engineering (EESC-USP) in the Mechatronics Group and from 2023 he is within the Optics Group of the São Carlos Institute of Physics. His research involves themes related to Scientific Time and Frequency Metrology, Optics, Embedded Systems and Instrumentation. Since 2013 he is one of the Principal Investigators of the Optics and Photonics Research Center – CePOF (CePID – FAPESP) and is responsible for the Center's Technology Transfer and Innovation. He is responsible at USP for the scientific and metrological development of the theme Time and Frequency Metrology of the Network of Laboratories Associated with INMETRO for Innovation and Competitiveness – LAIC (INMETRO is the Brazilian National Metrology Institute). The main focus of his research is the development of Atomic Frequency Standards based on Cold Atoms, like Atomic Fountains. He represents Brazil and is currently the chair of the C2 commission (Fundamental Constants) of the International Union of Pure and Applied Physics, participating in Working Group 2 for the review of the VIM (International Vocabulary of Metrology) of the BIPM (International Bureau of Weights and Measures).