

SUB-ATOMIC MOTIONS**From capturing electrons to probing human health****FERENC KRAUSZ****Nobel Laureate (2023 in Physics)***Max Planck Institute of Quantum Optics, Garching, Germany
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attoworld.de / cmf.hu***Date: Wednesday, April 17, 2024****Time: 2:30pm – 4:00pm****In-person: EEB 132 & Zoom**

Reception to follow: EEB Courtyard

<https://usc.zoom.us/j/93165718815?pwd=Qk5waTZ4N3V5cHFtYjFPRmRpSmxCZz09>

Meeting ID: 931 6571 8815

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Abstract: Born at the dawn of the new millennium, attosecond “photography” has opened the door for capturing sub-atomic motions as they evolve in time. Control of the oscillating electric field of light has permitted the attosecond control of electrons with unprecedented precision in space and time.

Fundamental quantum phenomena, such as electron tunnelling and dipole oscillations in atoms or light-electron energy exchange in solids as well as fundamental classical phenomena, such as the field oscillations of visible light, became accessible to human observation in slow-motion replay.

These capabilities open new avenues for 21st-century science, technology and medicine. Some of them emerge from the ability to sample light fields with attosecond precision. Possible implications of these advances include hundred thousand times faster electronics and cost-effective monitoring of human health.



Biography: Ferenc Krausz graduated in electrical engineering from the Budapest University of Technology and completed his studies in theoretical physics at the Eötvös Loránd University in 1985. He earned his doctorate in laser physics from the Technische Universität Wien (1991), where he became professor in 1998. In 2003-2004, he was appointed director at the Max-Planck-Institute of Quantum Optics in Garching and chair of experimental physics – laser physics at the Ludwig-Maximilians-Universität and established “Attoworld” at these two sites (attoworld.de).

In a series of experiments performed between 2001 and 2004 his team succeeded in producing and measuring isolated attosecond pulses of light and applying them to observe sub-atomic motions. Attoworld has been fostering the proliferation of the emerging field, attosecond science, and – since 2015 – exploring its utility for probing human health. For his contributions to establishing the field of Attosecond Science, Ferenc Krausz has been awarded the King-Faisal International Prize for Science (2013), the Wolf-Prize in Physics (2022), the BBVA Frontiers of Knowledge Award (2023) and the 2023 Nobel Prize in Physics.