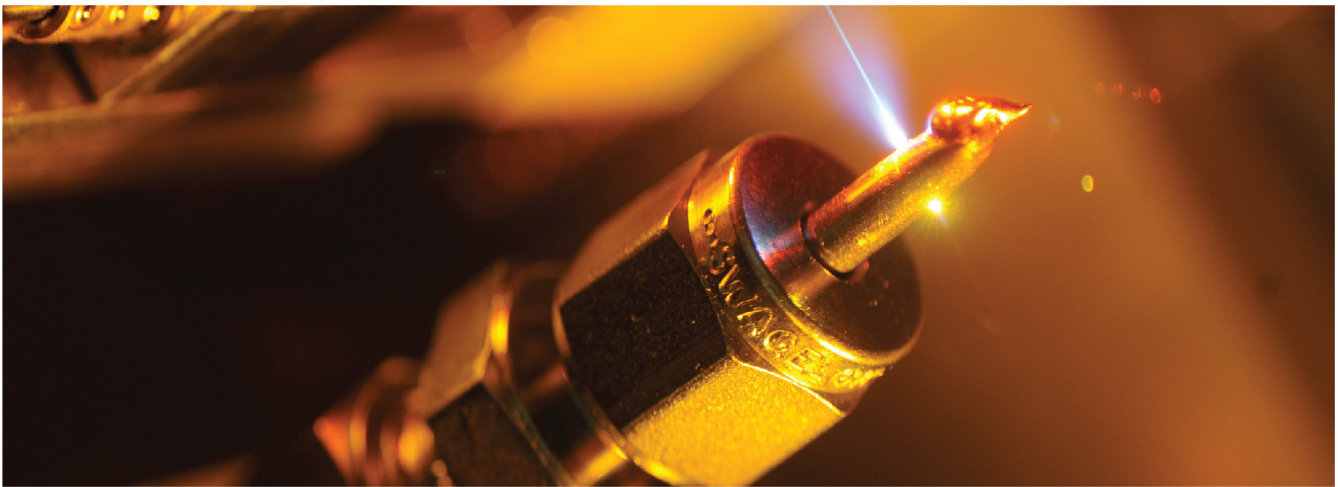


## Real-Time Observation and Control of Electron Motion

Electrons inside and between atoms emit light, carry and process information in biological systems and manmade devices, create, destroy, or modify molecules and thereby affect biological function, and are key players in physical, chemical, and life sciences as well as information, industrial, and medical technologies. Their motion at the atomic scale is measured in attoseconds. Attosecond science aims at measuring, controlling, and exploiting these processes. Recent advances in laser science open the door to watching and controlling these hitherto inaccessible microscopic dynamics via waveform-controlled few-cycle laser light, and attosecond pulses of extreme ultraviolet and soft-x-ray light. They provide a force capable of steering electrons inside and between atoms and a probe for tracking their motion, which may help our understanding of molecular processes such as the damage and repair mechanisms of DNA at the most fundamental level. Once implemented in condensed matter, the new technology will advance electronics and electron-based information technologies to their ultimate speed from microwave toward light-wave frequencies.



Ferenc Krausz earned his M.S. in Electrical Engineering at the Budapest University of Technology in 1985, his Ph.D. in Quantum Electronics at the Vienna University of Technology in 1991, and his habilitation degree in the same field at the same university in 1993. He joined the Department of Electrical Engineering as an Associate Professor in 1998 and became Full Professor in the same department in 1999. In 2003, he was appointed Director of the Max-Planck-Institut für Quantenoptik, and in October 2004, he became Professor of Physics and took over the Chair of Experimental Physics – Laser Physics at Ludwig-Maximilians-Universität München.

Thursday, November 20, 2014 | 3:00 p.m.

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