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Scientific Evening Talk

Tuesday, May 18, 2010, 18.30 h
Magnus-Haus Berlin, Am Kupfergraben 7, 10117 Berlin

Prof. Dr. Massimo Altarelli
Chairman of the Management Board
European XFEL GmbH, Hamburg

Watching atoms in action: the European X-ray Free-Electron Laser Project

The discussion will be chaired by
Prof. Dr. Martin Wolf, Freie Universität and Fritz-Haber-Institut Berlin

Afterwards, food and drinks in the 'Remise' sponsored by the WE-Heraeus-Foundation;
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Massimo Altarelli was born in Rome in 1948 and trained in condensed matter theory at the University of Rome. He performed theoretical research at the University of Rochester (1971-73), the University of Illinois at Urbana-Champaign (1974-79), the Max-Planck-Institut für Festkörperforschung in Stuttgart, and the Hochfeld-Magnetlabor in Grenoble (1980-86). In the years 1994-99, he created and led the Theoretical Group of the European Synchrotron Radiation Facility (ESRF) in Grenoble. He served as Research Director of the ESRF (1987-93), and as CEO and Scientific Director of the Elettra Synchrotron Light Laboratory at Trieste (1999-2005). In 2005, he moved to Hamburg to assume the leadership of the European X-ray Free-Electron Laser Project, of which he is currently Chairman of the Management Board and Managing Director.

Abstract: The discovery of x-rays as a tool to infer the atomic positions in molecules and solids triggered a quest for increasingly brilliant x-ray sour-ces. Synchrotrons (large circular accelerators for electrons) are very powerful x-ray sources, allowing major breakthroughs in structural biology, materials science, and imaging. To obtain not only a *picture* of atomic positions, but also a *film* of the atomic motions during chemical reactions or phase transitions, a new technology based on linear accelerators that allows to deliver ultra-bright and ultra-short pulses of spatially coherent (i.e. laser-like) x-rays, is developing. The principles and the scientific goals of Free-Electron Lasers (FEL), such as the presently operating FLASH in Hamburg and the LCLS at Stanford (California), as well as the European XFEL, presently under construction in Hamburg with 13 countries participating, will be described.