Ultra-fast Science with “Tickle and Probe”

June 20 & 21, 2011

Robert Purcell Conference Center, Cornell University, Ithaca NY

The purpose:
To assess the scientific potential of ultra-fast (~50 fs - few ps), diffraction limited, hard x-ray pulses at high repetition rates (>MHz) for time-resolved structural and spectroscopic studies of weakly pumped (tickled) systems.

The workshop will focus on new areas of scientific research and novel approaches that would be enabled by a high repetition rate ultrafast source.

Shin-ichi Adachi, High Energy Accelerator Research Organization, KEK
“Toward Fourier-limited X-ray Science”

Don Bilderback, Cornell University
“Expected Performance of CW ERL & USR Ultra-fast Hard X-ray Sources”

Christian Bressler, European XFEL GmbH
“Time-resolved X-ray Spectroscopies and Scattering with One Trillion Photons”

Edward Castner, Rutgers University
“Rapid Chemical and Physical Processes in Solution”

Lin Chen, Northwestern University
“X-ray Transient Absorption Spectroscopy: A Decade and Beyond”

Chi-Chang Kao, SLAC National Accelerator Laboratory
“What is the “ideal” X-ray Source? ”

Aaron Lindenberg, SLAC National Accelerator Laboratory
“High-repetition-rate Ultrafast X-ray Experiments with Accelerator-based Sources”

Anne Marie March, Advanced Photon Source
“X-ray Probes of Laser-controlled Molecules in Gases and Solutions”

David Reis, SLAC National Accelerator Laboratory
“Time-resolved Diffuse Scattering”

Robert Schoenlein, Lawrence Berkeley National Laboratory
“Ultrafast X-ray Studies of Complex Materials: Science Challenges and Opportunities”

Roseanne Sension, University of Michigan
“Using Optical Knobs to Control Photoinitiated Reactions”

Simone Techert, Max Planck Institute, Goettingen
“Molecular Switches and Molecular Machines Investigated with Ultrafast Pulsed X-ray Radiation”

Carol Thompson, Northern Illinois University
“Ferroelectrics at the ERL”

From the BESAC Grand Challenges report (12/20/2007)