

# Workshop on “Novel Trends in Photoemission”

October 4-5, 2011 – Lawrence Berkeley National Laboratory

This workshop is held as part of the 2011 ALS User Meeting. Photoelectron spectroscopy has become a very powerful experimental tool to study the electronic structure of a wide range of complex materials. This workshop brings together researchers to discuss new trends in the field of photoemission spectroscopy such as high-resolution, spin-resolved, soft X-ray, low-temperature, or time-resolved experiments and photoelectron studies of novel materials and physics. In addition, instrumentation developments, fast detectors, new source capabilities, sample preparation, and advances in data analysis will be covered. We can also discuss opportunities and challenges arising from laser ARPES and from next-generation light sources based on free electron lasers for the future of photoemission. Participants are invited to share their thoughts about new trends and incarnations of photoemission and the ways they can contribute to solving outstanding problems of condensed matter physics.

*Organizers:* Alexei Fedorov, Robert A. Kaindl, and Jonathan Denlinger – Lawrence Berkeley Lab

**Location:** Building 2, Room 100B (1st floor)

## Tuesday, October 4, 2011

- 12:45 pm      Welcome: Alexei, Robert, Jonathan
- 1:00 pm      **Uwe Bovensiepen** (University Duisburg-Essen, Germany) “*High- $T_C$  superconductors investigated with time- and angle-resolved photoemission*”
- 1:30 pm      **Brian Moritz** (SIMES, SLAC National Accelerator Lab) “*Pump-Probe Photoemission and Nonequilibrium Electronic Response*”
- 2:00 pm      **Alessandra Lanzara** (U.C. Berkeley and MSD, Berkeley Lab) “*A Pump Probe Angle-Resolved Photoemission Study of High-temperature Superconductors*”
- 2:30 pm      *Discussion, Group Photo & Coffee (ALS Patio)*
- 3:10 pm      **Sergey Borisenko** (Leibniz Institute for Solid State and Materials Research, Dresden, Germany) “*New ARPES facility at BESSY*”
- 3:40 pm      **Luca Moreschini** (ALS, Berkeley Lab) “*Advanced pulsed-laser deposition system for ARPES applications*”
- 4:10 pm      **Donghui Lu** (Stanford Synchrotron Research Lightsource, SLAC) “*A New Photoemission Branch Line at SSRL Beam Line 5*”
- 4:40 pm      **Vladimir Strokov** (Swiss Light Source, Paul Scherrer Institute, Switzerland) “*Soft-X-Ray ARPES View of Three-Dimensional Electronic Structure*”

5:10 pm *Discussion & break*

5:30 pm *Awards Dinner (ALS patio)*  
– 7:30 pm

## Wednesday, October 5, 2011

8:00 am *Coffee (ALS patio)*

8:30 am **Peter Denes** (Berkeley Lab) “*Progress in high-speed electron and X-ray imaging detectors*”

9:00 am **Nuh Gedik** (MIT) “*Simultaneous vectorial spin mapping of a topological insulator using circularly-polarized time-of-flight photoemission*”

9:30 am **Oswald Siegmund** (U.C. Berkeley Space Sciences Lab) “*Advances in microchannel plate detectors for high spatial and timing resolution event sensing*”

10:00 am **Chris Jozwiak** (U.C. Berkeley and ALS, Berkeley Lab) “*High-efficiency spin-resolved ARPES of a topological insulator with the spin-TOF analyzer*”

10:30 am *Discussion & Coffee (ALS Patio)*

10:45 am **Dan Dessau** (University of Colorado, Boulder) “*Dynamics of electron interactions and the origin of Fermi arcs in cuprate superconductors*”

11:15 am **Norman Mannella** (University of Tennessee, Knoxville) “*The itinerant vs. localized magnetic moment issue and doping dependence in Fe-based superconductors as revealed by soft X-ray spectroscopies*”

11:45 am **Yiming Xu** (MSD, Berkeley Lab) “*Isotropic superconducting gaps with enhanced pairing on electron Fermi surfaces in  $FeTe_{0.55}Se_{0.45}$* ”

12:00 pm **Peng Zhang** (IOP Chinese Academy of Science and Berkeley Lab) “*Precise Method for Visualizing Dispersive Features in Image Plots*”

12:15 pm *Lunch*

1:30 pm **Robert Schoenlein** (NGLS Project and MSD, Berkeley Lab) “*The Next Generation Light Source: Facility Overview and Applications for Understanding Correlated Materials*”

- 2:00 pm Discussion: Opportunities and challenges in photoemission
- 2:30 pm *Continued Discussion & Coffee (ALS Patio)*
- 2:50 pm **Alexander Gray** (U.C. Davis and SLAC) “*Emerging Photoemission Techniques for Probing Buried Layers and Interfaces: HAXPES, HARPES and SWARPES*”
- 3:20 pm **Aaron Bostwick** (ALS, Berkeley Lab) “*MAESTRO, a new facility for ARPES at the ALS*”
- 3:50 pm **Choonkyu Hwang** (MSD, Berkeley Lab) “*Measuring Quantum Phases in Graphene by Photoemission Spectroscopy*”
- 4:05 pm **David Siegel** (U.C. Berkeley) “*The Carbon Face of SiC and how Electron-Electron Interactions Distort the Dirac Cone in Graphene*”
- 4:20 pm *Discussion & Closeout*