

The C10 Activity Report: Structure and Dynamics of Condensed Matter

Three Year Commission Report (Jan. 2015 - Oct. 2017)

(Submitted by J. Raynien Kwo, C10 Chair)

❖ C10 Members for the years of 2015-2017

Officers:

1. Chair: J. Raynien Kwo (2014) (2011) (2008)

Department of Physics, National Tsing Hua University, Hsinchu, Taiwan

Vice-Chair: Laura Greene (2014) (2011)

Department of Physics, University of Illinois, Urbana-Champaign, Urbana, Illinois, USA

Secretary: Hartmut S. Leipner (2014) (2011)

Interdisziplinäres Zentrum für Material-Wissenschaften der Universität Halle-Wittenberg, Halle, Germany

Members:

2. Maria Luisa Medarde Barragan (2014)

Laboratory for Developments and Methods, Paul Scherrer Institut, Switzerland

Jonas Fransson (2014) (2011)

Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden

Vladimir Kulakovskii (2014)

Solid State Physics Institute, RAS, Central'naya, Chernogolovka, Moscow Region, Russian Federation

Najeh Thabet Mliki (2014) (2011)

Department of Physics, Faculty of Science of Tunis, University of Tunis El Manar, Tunis Tunisia

Kell Mortensen (2014)

Niels Bohr Institute, University of Copenhagen, Universitetsparken, Copenhagen, Denmark

Youichi Murakami (2014)

Institute of Materials Structure Science, High Energy Accelerator Research, Tsukuba, Japan

TaeWon Noh (2014)

Center for Correlated Electron Systems, Seoul National University, Seoul Republic of Korea

Rob Robinson (2014) (2011)

Australian Nuclear Science & Technology Organization, New South Wales, Australia

Dominik Schaniel (2014)

Laboratory for Crystallography, Magnetic Resonance, and Modelling, Vandoeuvre-l,
France

Matt Tucker (2014)

ISIS facility & Diamond light source Ltd, Harwell, Oxford, UK

Mu Wang (2014) (2011)

National Lab of Solid State Microstructure, School of Physics, Nanjing University,
Nanjing, China

❖ **C10 Activity Report: (From 1/2015 to 10/2017)**

1. **The C10 Young scientist prize (YSP) 2015** award ceremony was held in APS March meeting, San Antonio, USA, March 3, 2015.



Left to right:

YSP 2015 winner, Prof. Keji Lai of Univ., Texas, Austin, C10 Chair, Prof. J. Raynien Kwo, National Tsing Hua University, Taiwan, C10 Vice Chair, Prof. Laura Greene, University of Illinois, Urbana Champaign, in the APS Award Ceremony, March meeting, March, 3, 2015, San Antonio, US.

The prize winner was Prof. Keji Lai, Assistant Professor of Department of Physics, University of Texas-Austin.

The citation is:

“For his outstanding contribution in nanoscale impedance imaging of strongly correlated and low-dimensional quantum materials”.

He has delivered an award lecture entitled “Nanoscale Impedance Imaging of Novel Quantum Materials” during APS March meeting on 3/5/2015.

Dr. Lai received his B.S degree in Tsinghua University, China in 2001 and Ph. D in Department of Electrical Engineering, Princeton University, U.S.A. in 2006. He became a Post-Doctoral Research Fellow in Department of Applied Physics, Stanford University in 2006 and Research Scientist in 2011. He has been at the present position since 2012.

2. The C10 YSP Young scientist prize (YSP) 2016

The call for YSP 2016 nomination was announced on 5/1/2015. The deadline was set at 7/15, 2015. Overall, we have received ten new, excellent applicants from countries including Korea, China, India, US, and Europe, etc. The calibers of these candidates are just astounding! We also had three roll over candidates from last year. After conducting the public votes, and eight concerted C10 members have sent in their votes electronically. We have successfully selected the YSP 2016 winner on 9/16.

The winner is Dr. Wenzhong Bao, Fudan University, China.

His citation reads:

Dr. Wenzhong Bao

Professor, Department of Microelectronics, Fudan University.

“For his outstanding contribution in electrical and mechanical properties of the low-dimensional quantum materials.”

Wenzhong Bao received his B. S. degree in Nanjing University, China in 2006 and Ph.D. from Department of Physics and Astronomy at the University of California, Riverside in 2011, then worked as a postdoctoral researcher at University of Maryland, College Park. He has been at the present position since 2015.

Dr. Bao received the Prize Certificate, Medal and Monetary Prize in DMP/DCMP Reception that honors the Awardees and Fellows in the annual APS March meeting,

March 15, 2016 in Baltimore, Maryland US. He also gave an invited prize talk in the same meeting in one of the invited symposium.



Photo left to right: Sharon Glotzer (University of Michigan), Chair DCMP; Wenzhong Bao (Fudan University), YSP C10 2016 winner; Laura Greene (National Mag Lab and Florida State University) DMP Past Chair and IUPAP C10 Vice Chair; John Mitchell (Argonne National Laboratory) DMP Chair

3. Young Scientists prize 2017

We have completed the process of the C10 YSP, 2017. The call for YSP 2017 nomination was announced publicly on 6/1/2016. The deadline was on 8/15, 2016. Overall, we have received eight new, excellent applicants from countries including Korea, China, India, US, and Europe, etc. with very high caliber. We also had eight roll over candidates from last year. The YSP 2017 winner was successfully elected on 10/1.

The winner is

Dr. Cui-zu Chang

Assistant Professor, Department of Physics, Penn State University, University Park, PA.

His citation:

“For the discovery of quantum anomalous Hall effect in magnetically doped 3D topological insulator films”.

Dr. Chang received the Prize Certificate, Medal and Monetary Prize in DMP/DCMP Reception that honors the Awardees and Fellows in the annual APS March meeting, New Orleans, US, March 13-17, 2017. He also gave an invited prize talk in the same meeting in one of the invited symposium.



Photo from left to right: YSP 2017 winner, Dr. C.Z. Chang with C10 Commission Vice Chair, Prof. Laura Greene in the APS award reception, March 14, 2017.

4. C10 Young Scientists prize 2018

The C10 2018 YSP was announced publically to call for nominations from 6/1 till 7/31/2017. In total, ten new candidates were nominated, plus five rollover candidates from the 2017 candidates who have PhD received within eight years. The finalist YSP 2018 was selected on 9/28/2017. Among very competitive 15 nominees this year, after the first round of scorings, followed by another round of a run off among the top four candidates, we have decided a final winner to be Dr. Michele Ceriotti.

Dr. Michele Ceriotti:

Tenure-track Assistant Professor, since 2013
Institute of Materials, École Polytechnique
Fédérale de Lausanne (EPFL)
Lausanne, SWITZERLAND

The citation:

“For developing novel and original algorithms to extend the scope and accuracy of molecular dynamics simulations, and to rationalize and predict the structure-property relations in complex materials.”

The prize ceremony will be held in the APS March meeting, Los Angeles, 2018, on Tuesday night, March 6th.

5. C10 Sponsored conferences (1/2015-12/2017)

(1) The **2015 International Conference on Materials and Mechanisms of Superconductivity and High-Temperature Superconductivity (M²S HTSC 2015)** took place from Sunday, August 23 to Friday, August 28 in Geneva, Switzerland. This C10-IUPAP sponsored conference was the 11th in the successful series of these tri-annual conferences. Some 700 scientists from 42 countries participated. Superconductivity is the phenomenon of electrical current flow without any loss of energy due to resistance. This extremely useful phenomenon is nowadays routinely applied in medical applications of magnetic resonance imaging (MRI), in large scale magnetic guiding systems such as CERN, the presently constructed nuclear fusion energy plant ITER, in high throughput electrical power cables, as well as the maglev train presently in construction by Japanese Railways. The field of superconductivity is heavily driven by experimental progress using the most advanced technology available. The participants of M²S are actively involved in materials science, experimental techniques, theoretical research and/or applications of superconductivity. The experimental techniques involve materials processing, crystal growth and characterization, low temperature techniques, ultrahigh vacuum, various kinds of neutron-, electron-, optical-, X-ray, and scanning probe techniques. Superconductivity is also the subject of intense theoretical research, and has spurred novel ground breaking theoretical approaches to the mechanisms of superconductivity and more generally of emergent properties of strongly interacting electrons. <http://www.m2s-2015.ch/>.



Photo of most of the IUPAP-sponsored participants at M²S 2015 with the Conference Chair, Dirk van der Marel and the C10 vice chair, Laura Greene.

(2) C10 also has sponsored another conference of “**Sixth International Conference on Nanostructures**” (ICNS6)” in 2016, as organized by the Institute for Nanoscience and

Nanotechnology (INST) of Sharif University of Technology, Iran. It was held in beautiful Kish Island, Iran on March 7-10, 2016. The Conference has gathered well known international scientists and researchers to exchange ideas, share new knowledge and present advances in the fields of Nanoscience and Nanostructures, as an important international and multi-disciplinary event in the field of nanotechnology.

6. Cross-commission engagement within IUPAP:

For the new Working Group of Accelerator Science in the IUPAP, C10 has nominated Dr. Di-jing Huang, the Deputy Director of Taiwan's National Synchrotron Radiation Research Center (NSRRC) to be the new member.