# TABLE OF CONTENTS

- Program ............................................................................. 2
- Abstracts ............................................................................ 5
- Participant List ................................................................. 11
- Talk Uploading Instructions ............................................... 13
- Wireless Information .......................................................... 13
- Additional Information
  - Locations ....................................................................... 14
  - Dinner Information .......................................................... 14
Welcome to EIG 2013

The discovery of graphene launched a very exciting field which continues to bring new surprising phenomena. Recent progresses made in graphene and other novel 2D material systems start to reveal interesting emergent physics where electron-electron interactions play a key role. The goal of this workshop is to bring together the leading experts and young researchers working in this field.

The workshop is sponsored and organized by the William I. Fine Theoretical Physics Institute, part of the School of Physics and Astronomy, at the University of Minnesota.

We appreciate your contribution to this exciting event, thank you for your participation.

Scientific Organizing Committee:

Philip Kim, Columbia University  
Boris Skhlovskii, University of Minnesota  
Michael Zudov, University of Minnesota

http://www.ftpi.umn.edu/workshops/2012-2013/eig2013/index.html
### Electron-Electron Interactions in Graphene and Other New 2D Materials

**May 3-5, 2013**

**University of Minnesota, Minneapolis, MN**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 AM</td>
<td>Please pick up your registration booklets with the workshop staff.</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td><strong>Boris Shklovskii</strong>, <em>University of Minnesota, Fine Theoretical Physics Institute</em>&lt;br&gt;Welcome and Opening Remarks</td>
<td></td>
</tr>
<tr>
<td>9:05 AM</td>
<td><strong>Andre Geim</strong>, <em>University of Manchester</em>&lt;br&gt;Beyond graphene: heterostructures assembled from individual atomic planes</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>10:45 AM</td>
<td><strong>Pablo Jarillo-Herrero</strong>, <em>Massachusetts Institute of Technology</em>&lt;br&gt;Quantum transport in graphene/hBN heterostructures</td>
<td></td>
</tr>
<tr>
<td>11:30 AM</td>
<td><strong>Francisco Guinea</strong>, <em>Universidad Autónoma de Madrid</em>&lt;br&gt;Interaction effects and electronic conductivity in graphene near the neutrality point</td>
<td></td>
</tr>
<tr>
<td>12:15 PM</td>
<td>LUNCH</td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td><strong>Eva Andrei</strong>, <em>Rutgers University</em>&lt;br&gt;Screening charge impurities in graphene - from cloaking to supercriticality</td>
<td></td>
</tr>
<tr>
<td>2:45 PM</td>
<td><strong>Allan MacDonald</strong>, <em>University of Texas</em>&lt;br&gt;Broken SU(4) symmetry and the fractional quantum Hall effect in graphene</td>
<td></td>
</tr>
<tr>
<td>3:30 PM</td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>4:00 PM</td>
<td><strong>Chun Ning Lau</strong>, <em>University of California, Riverside</em>&lt;br&gt;Transport studies of correlated phenomena in few layer graphene</td>
<td></td>
</tr>
<tr>
<td>4:45 PM</td>
<td><strong>Sankar Das Sarma</strong>, <em>University of Maryland</em>&lt;br&gt;Graphene as an interacting Fermi liquid</td>
<td></td>
</tr>
</tbody>
</table>
Saturday, May 4
Mayo Memorial Auditorium, Mayo Memorial Building

9:00 AM  Philip Kim, Columbia University
Hofstadter’s butterfly in graphene

9:45 AM  Vladimir Falko, Lancaster University
Generations of Dirac electrons due to moiré superlattice in graphene

10:30 AM  COFFEE BREAK

11:00 AM  Brian Skinner, University of Minnesota
Large capacitance enhancement in graphene driven by electron correlations

11:45 AM  Tony Heinz, Columbia University
Probing electron-electron interactions in graphene and MoS$_2$ by optical spectroscopy

12:30 PM  LUNCH

2:00 PM  Leonid Levitov, Massachusetts Institute of Technology
Electron interactions and collective energy transport in graphene

2:45 PM  Alberto Morpurgo, University of Geneva
Interaction effects in suspended graphene devices

3:30 PM  COFFEE BREAK

4:00 PM  Amir Yacoby, Harvard University
TBA

6:00 PM  DINNER
Campus Club West Wing
300 Washington Ave SE
412 Coffman Union
Minneapolis, MN 55455
Sunday, May 5
Mayo Memorial Auditorium, Mayo Memorial Building

9:00 AM  Marek Potemski, Grenoble High Magnetic Field Laboratory
Electron-phonon coupling and electronic excitations in graphene, as probed by magneto-Raman scattering

9:45 AM  Michael Fogler, University of California, San Diego
Intrinsic plasmon damping in graphene

10:30 AM COFFEE BREAK

11:00 AM  Leonid Ponomarenko, University of Manchester
Interaction phenomena and Coulomb drag in graphene double layer structures

11:45 AM  Igor Gornyi, Karlsruhe Institute of Technology
Coulomb drag in graphene

12:30 PM Workshop closing
Andre Geim
*Beyond graphene: heterostructures assembled from individual atomic planes*

Pablo Jarillo-Herrero
*Quantum transport in graphene/hBN heterostructures*

In this talk I will present two of our recent experiments on quantum transport in graphene/hBN heterostructures: the measurement of the quantum spin Hall effect in monolayer graphene, and the realization of massive Dirac fermions and Hofstadter Butterfly in nearly rotationally-aligned graphene/hBN devices.

Francisco Guinea
*Interaction effects and electronic conductivity in graphene near the neutrality point*

Electronic transport in ballistic graphene samples at the Dirac energy is described by the so-called pseudodiffusive regime, unique to graphene. Transport is due to low energy electrons tunneling between the electrodes. We analyze how this regime is changed by the electron-electron interactions, and by the coupling of the tunneling electrons to the graphene’s environment.

Eva Andrei
*Screening charge impurities in graphene - from cloaking to supercriticality*

Allan MacDonald
*Broken SU(4) symmetry and the fractional quantum Hall effect in graphene*

Graphene can be described at low energies by a continuum model with spin, valley, sub-lattice pseudospin, and orbital degrees-of-freedom. The system Hamiltonian has strong coupling between orbital and sub-lattice pseudospin degrees of freedom, but is approximately invariant under rotations in the 4-dimensional spin-valley space. From this point of view recent observations of the fractional quantum Hall effect in the N=0 Landau level of graphene are perplexing. Although they seem to exhibit the reduced gaps at 1/3 and similar filling factors that are expected in systems with valley degeneracy when the filling factor magnitude is larger than 1, this tendency seems to be absent when the filling factor magnitude is smaller than 1. I will describe an effort to understand this behavior as a consequence of the valley symmetry breaking.
which favors spin-density-wave states at the carrier neutrality point.

Chun Ning (Jeanie) Lau  
*Transport studies of correlated phenomena in few layer graphene*

Graphene, a two-dimensional single atomic layer of carbon, has recently emerged as a new model system for condensed matter physics, as well as a promising candidate for electronic materials. Though single layer graphene is gapless, bilayer and trilayer graphene have tunable band gaps that arise from collective excitation of electrons. Here I will present our results on transport measurements of suspended bilayer and trilayer graphene devices with mobility as high as 400,000 cm²/Vs. We demonstrate the presence of an intrinsic gapped state in bilayer and trilayer graphene at the charge neutrality point, evidence for quantum phase transition, and symmetry-broken quantum Hall states. Our results underscore the fascinating many-body physics in these 2D membranes.

Sankar Das Sarma  
*Graphene as an interacting Fermi liquid*

Philip Kim  
*Hofstadter’s butterfly in graphene*

Electrons moving in a periodic electric potential form Bloch energy bands where the mass of electrons are effectively changed. In a strong magnetic field, the cyclotron orbits of free electrons are quantized and Landau levels forms with a massive degeneracy within. In 1976, Hofstadter showed that for 2-dimensional electronic system, the intriguing interplay between these two quantization effects can lead into a self-similar fractal set of energy spectrum known as Hofstadter’s Butterfly. Experimental efforts to demonstrate this fascinating electron energy spectrum have continued ever since. Recent advent of graphene, where its Bloch electrons can be described by Dirac fermions, provides a new opportunity to investigate this half century old problem experimentally. In this presentation, I will discuss the experimental realization Hofstadter’s Butterfly via substrate engineered graphene under extremely high magnetic fields controlling two competing length scales governing Dirac-Bloch states and Landau orbits, respectively.
Vladimir Falko  
*Generations of Dirac electrons due to moiré superlattice in graphene*

The transformation of the linear Dirac spectrum of electrons in monolayer graphene and parabolic spectrum in bilayer graphene due to the influence of a tightly bound insulating or semiconducting layer is studied. We present a symmetry-based classification and quantitative analysis of generic miniband structures for electrons in graphene heterojunction with a 2D crystal with the hexagonal Bravais symmetry, such as boron nitride. In particular, we identify conditions at which the first moiré miniband is separated from the rest of the spectrum by either one or a group of three isolated mini Dirac points and is not obscured by dispersion surfaces coming from other minibands. In such cases the Hall coefficient exhibits two distinct alternations of its sign as a function of charge carrier density. Then, we study the Hofstadter spectrum of electrons in a magnetic field.

Brian Skinner  
*Large capacitance enhancement in graphene driven by electron correlations*

In a standard parallel plate capacitor, the capacitance per unit area is determined by the geometric distance between the two metallic electrodes. If one of these electrodes is replaced by a low-density electron gas, however, then the finite density of states of the electron gas creates a "quantum capacitance" that adds in series with the normal geometric part. It is natural to think that this contribution will lower the overall capacitance, but in this talk I show how electron correlation effects can in fact lead to a capacitance that is enormously enhanced above the geometric value (a large negative quantum capacitance). I discuss in particular the case of graphene in a strong magnetic field, and show that the value of the capacitance in the limit of small filling factor is limited only by disorder.

Tony Heinz  
*Probing electron-electron interactions in graphene and MoS$_2$ by optical spectroscopy*

The role of electron-electron interactions in 2D materials is pervasive. We will discuss some of the signatures of these interactions in both graphene and atomically thin layers of MoS$_2$ in the context of the materials’ optical response. In the case of graphene, we have observed saddle-point excitons associated with the M-point transition through the characteristic lineshape in the optical conductivity. We have also shown that these many-body interactions and, correspondingly, the character of the saddle-point exciton can be modified by electrostatic doping. For MoS$_2$, many-body effects give rise to tightly bound excitons. Indeed, even three-particle charged excitons are
formed. We will describe the recent observation of these trion states and their stability even at room temperature.

Leonid Levitov  
*Electron interactions and collective energy transport in graphene*

The atomic collapse, predicted for superheavy nuclei, results in formation of complex-energy states which decay rapidly. However, the existing atomic numbers go only up to $Z = 118$, falling short of the predicted threshold for collapse. Interest in this problem has been revived with the advent of graphene, where because of a large fine structure constant the collapse threshold is reduced to $Z \sim 1$. However, recent experiments seem to indicate that atomic collapse does not occur for $Z = 1$ (univalent impurities). In this talk we outline an alternative route to collapse which may in principle allow for the observation of this phenomenon even at $Z < 1$. We consider an Aharonov-Bohm (AB) solenoid positioned at the same location as the point charge producing the $Ze/r$ potential. We show that massless Dirac particles moving in the combined field of the solenoid and the point charge undergo collapse for values $Z > Z_c$, where the critical charge value $Z_c$ can be considerably lower than in the absence of the AB solenoid. By tuning the solenoid flux the collapse threshold can be lowered to values $Z \ll 1$. We will also discuss the recent observation of the atomic collapse using artificial nuclei built in situ and probed by STM tunneling spectroscopy.

Alberto Morpurgo  
*Interaction effects in suspended graphene devices*

I will discuss a number of recent experiments on suspended graphene devices, where different effects due to Coulomb interactions are visible. As a first example, I will discuss transport through suspended graphene nano-ribbons that form spontaneously during current annealing of graphene. In these ribbons, the half-integer quantum Hall effect due to non-interacting Dirac fermions emerges upon the application of a perpendicular magnetic field- from the transport regime characteristic of nano-ribbons, dominated by the formation disorder induced random quantum dots. I will then move on to discuss multi-terminal devices based on suspended graphene (and its multilayers), for which we have developed a rather reproducible fabrication technique. The focus of this part of the talk will be on graphene bilayers, both a zero and at high magnetic field.
Amir Yacoby

Marek Potemski

*Electron-phonon coupling and electronic excitations in graphene, as probed by magneto-Raman scattering*

The results of magneto-Raman scattering experiments on graphene, on graphite, on Si/SiO2 and on h-BN substrates will be reviewed. Purely electronic response in Raman scattering spectra will be demonstrated and a rich spectrum of magneto-phonon resonances which imply phonons from Gamma- as well as K-point of the Brillouin zone will be reported. The experiment data are in overall agreement with the existing theoretical models, but at the same time reveal new, subtle effects related to electron-phonon and possibly electron-electron interactions (resonances of two-particle excitations, changes in the Fermi velocity). A phenomenological interpretation of these latter observations will be suggested. An evolution of the magneto-Raman scattering response with doping and in multi-layer graphene (bilayer, quadri-layer, graphite) will be also discussed.

Michael Fogler

*Intrinsic plasmon damping in graphene*

The fundamental limit of the plasmon lifetime is an important problem for the emerging field of graphene nanoplasmonics. I will discuss theoretical estimates for two intrinsic mechanisms of plasmonic losses. One is anomalous Landau damping near graphene edges. The other is multi-pair electron-hole excitations. I will compare the results with the previous theory and recent experiments.

Leonid Ponomarenko

*Interaction phenomena and Coulomb drag in graphene double layer structures*

Coulomb drag is a frictional coupling between electric currents flowing in spatially separated conducting layers. It is caused by interlayer electron-electron interactions. Previously, only the regime of weak \((d >> l)\) to intermediate \((d \sim l)\) coupling could be studied experimentally, where \(d\) is the interlayer separation and \(l\) is the characteristic distance between charge carriers. Here we use graphene-boron-nitride heterostructures with \(d\) down to 1 nm to probe Coulomb drag in the limit \(d \ll l\) such that the two Dirac liquids effectively nest within the same plane, but can still be tuned and measured independently. The strongly interacting regime reveals many unexpected
features. In particular, although drag vanishes because of electron-hole symmetry when either layer is neutral, we often find drag strongest when both layers are neutral. Under this circumstance, drag is positive in zero magnetic field but changes its sign and rapidly grows in strength with field. We also observed strong Hall drag effect comparable in amplitude with longitudinal drag resistance. A phenomenological model is proposed to explain Hall- and magneto-drag near charge neutrality in graphene. Low temperature Hall drag measurements reveal formation of excitons in the graphene double layer system.

Igor Gornyi
*Coulomb drag in graphene*

We study Coulomb drag in graphene near the Dirac point, focusing on the regime of interaction-dominated transport. We establish a novel, graphene-specific mechanism of Coulomb drag based on fast interlayer thermalization, inaccessible by standard perturbative approaches. Using the quantum kinetic equation framework, we derive a hydrodynamic description of transport in double-layer graphene in terms of electric and energy currents. In the clean limit, the drag becomes temperature independent. In the presence of disorder the drag coefficient at the Dirac point remains nonzero due to higher-order scattering processes and interlayer disorder correlations. At low temperatures (diffusive regime) these contributions manifest themselves in the peak in the drag coefficient centered at the neutrality point with a magnitude that grows with lowering temperature. Motivated by recent experiments, further we propose a phenomenological model of the magnetodrag in graphene. Near charge neutrality, each of the layers contains two kinds of carriers (quasiparticles) with opposite electric charge -- electrons and holes, such that the quasiparticle (or energy) and electric currents become noncollinear in the presence of external magnetic field. Precisely at the Dirac point, these currents are orthogonal to each other, giving rise to a giant magnetodrag. The sign of the drag resistance depends on the strength of the electron-phonon interaction, as well as on the geometry of the sample. Away from the Dirac point, the quasiparticle current acquires a component in the direction of the electric current, leading to non-zero Hall drag. The results of the model agree with the experimental data in weak magnetic fields measured in double-layer graphene/boron-nitride heterostructures.
PARTICIPANT LIST

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>David Abergel</td>
<td>University of Maryland</td>
<td><a href="mailto:dabergel@umd.edu">dabergel@umd.edu</a></td>
</tr>
<tr>
<td>Eva Andrei</td>
<td>Rutgers University</td>
<td><a href="mailto:eandre@physics.rutgers.edu">eandre@physics.rutgers.edu</a></td>
</tr>
<tr>
<td>Yilikal Ayino</td>
<td>University of Minnesota</td>
<td><a href="mailto:ayino@physics.umn.edu">ayino@physics.umn.edu</a></td>
</tr>
<tr>
<td>Vladimir Bychkov</td>
<td>University of Minnesota</td>
<td><a href="mailto:bychk001@umn.edu">bychk001@umn.edu</a></td>
</tr>
<tr>
<td>Chun Chen</td>
<td>University of Minnesota</td>
<td><a href="mailto:cchen@physics.umn.edu">cchen@physics.umn.edu</a></td>
</tr>
<tr>
<td>Tianran Chen</td>
<td>University of Minnesota</td>
<td><a href="mailto:tc@physics.umn.edu">tc@physics.umn.edu</a></td>
</tr>
<tr>
<td>Paul Crowell</td>
<td>University of Minnesota</td>
<td><a href="mailto:crowell@umn.edu">crowell@umn.edu</a></td>
</tr>
<tr>
<td>Tianbai Cui</td>
<td>University of Minnesota</td>
<td><a href="mailto:cuixx105@umn.edu">cuixx105@umn.edu</a></td>
</tr>
<tr>
<td>Sankar Das Sarma</td>
<td>University of Maryland</td>
<td><a href="mailto:dassarma@umd.edu">dassarma@umd.edu</a></td>
</tr>
<tr>
<td>Abel Demissie</td>
<td>University of Minnesota</td>
<td><a href="mailto:demi0057@umn.edu">demi0057@umn.edu</a></td>
</tr>
<tr>
<td>Tom Dunn</td>
<td>University of Minnesota</td>
<td><a href="mailto:dunn@physics.umn.edu">dunn@physics.umn.edu</a></td>
</tr>
<tr>
<td>Quentin Ebner</td>
<td>University of Minnesota</td>
<td><a href="mailto:ebner@physics.umn.edu">ebner@physics.umn.edu</a></td>
</tr>
<tr>
<td>Vladimir Falko</td>
<td>Lancaster University</td>
<td><a href="mailto:v.falko@lancaster.ac.uk">v.falko@lancaster.ac.uk</a></td>
</tr>
<tr>
<td>Rafael Fernandes</td>
<td>University of Minnesota</td>
<td><a href="mailto:rfernand@umn.edu">rfernand@umn.edu</a></td>
</tr>
<tr>
<td>Michael Fogler</td>
<td>U of California, San Diego</td>
<td><a href="mailto:mfogler@ucsd.edu">mfogler@ucsd.edu</a></td>
</tr>
<tr>
<td>Andre Geim</td>
<td>University of Manchester</td>
<td><a href="mailto:geim@manchester.ac.uk">geim@manchester.ac.uk</a></td>
</tr>
<tr>
<td>Chad Geppert</td>
<td>University of Minnesota</td>
<td><a href="mailto:geppert@physics.umn.edu">geppert@physics.umn.edu</a></td>
</tr>
<tr>
<td>Fereshte Ghabari</td>
<td>Columbia University</td>
<td><a href="mailto:fg2184@columbia.edu">fg2184@columbia.edu</a></td>
</tr>
<tr>
<td>Igor Gornyi</td>
<td>Karlsruhe Institute of Technology</td>
<td><a href="mailto:igor.gornyi@kit.edu">igor.gornyi@kit.edu</a></td>
</tr>
<tr>
<td>Martin Greven</td>
<td>University of Minnesota</td>
<td><a href="mailto:greven@physics.umn.edu">greven@physics.umn.edu</a></td>
</tr>
<tr>
<td>Francisco Guinea</td>
<td>Universidad Autónoma de Madrid</td>
<td><a href="mailto:paco.guinea@icmm.csic.es">paco.guinea@icmm.csic.es</a></td>
</tr>
<tr>
<td>J Woods Halley</td>
<td>University of Minnesota</td>
<td><a href="mailto:woods@woods1.spa.umn.edu">woods@woods1.spa.umn.edu</a></td>
</tr>
<tr>
<td>Li He</td>
<td>University of Minnesota</td>
<td><a href="mailto:hexxx567@umn.edu">hexxx567@umn.edu</a></td>
</tr>
<tr>
<td>Tony Heinz</td>
<td>Columbia University</td>
<td><a href="mailto:tony.heinz@columbia.edu">tony.heinz@columbia.edu</a></td>
</tr>
<tr>
<td>Pablo Jarillo-Herrero</td>
<td>Massachusetts Institute of Technology</td>
<td><a href="mailto:pjarillo@mit.edu">pjarillo@mit.edu</a></td>
</tr>
<tr>
<td>Kostyantyn Kechedzhi</td>
<td>University of Maryland</td>
<td><a href="mailto:kechedzh@umd.edu">kechedzh@umd.edu</a></td>
</tr>
<tr>
<td>Maxim Khodas</td>
<td>University of Iowa</td>
<td><a href="mailto:maxim.khodas@gmail.com">maxim.khodas@gmail.com</a></td>
</tr>
<tr>
<td>Chang Hyun Kim</td>
<td>University of Minnesota</td>
<td><a href="mailto:kimx2960@umn.edu">kimx2960@umn.edu</a></td>
</tr>
<tr>
<td>Philip Kim</td>
<td>Columbia University</td>
<td><a href="mailto:pk2015@columbia.edu">pk2015@columbia.edu</a></td>
</tr>
<tr>
<td>Yevhen Kurianovych</td>
<td>University of Minnesota</td>
<td><a href="mailto:Kuri014@umn.edu">Kuri014@umn.edu</a></td>
</tr>
</tbody>
</table>
WILLIAM I. FINE THEORETICAL PHYSICS INSTITUTE

Electron-Electron Interactions in Graphene and Other New 2D Materials

May 3-5, 2013

University of Minnesota, Minneapolis, MN

Chun Ning (Jeanie) Lau
University of California, Riverside
lau@physics.ucr.edu

Leonid Levitov
Massachusetts Institute of Technology
levitov@mit.edu

Mo Li
University of Minnesota
moli@umn.edu

Yangmu Li
University of Minnesota
yl@physics.umn.edu

Changjiang Liu
University of Minnesota
clu@physics.umn.edu

Feilong Liu
University of Minnesota
liux0756@umn.edu

Yue Liu
University of Minnesota
liux1387@umn.edu

Allan MacDonald
University of Texas, Austin
macd@physics.utexas.edu

Peter Martin
University of Minnesota
pmartin@physics.umn.edu

Alberto Morpurgo
University of Geneva
alberto.morpurgo@unige.ch

Hyeong-Ryeol Park
University of Minnesota
park1347@physics.umn.edu

Leonid Ponomarenko
University of Manchester
leonid.ponomarenko@manchester.ac.uk

Marek Potemski
Grenoble High Magnetic Field Laboratory
marek.potemski@lnl.infn.it

Javier Sanchez-Yamagishi
Massachusetts Institute of Technology
jdsy@mit.edu

Michael Schecter
University of Minnesota
schecter@physics.umn.edu

Tigran Sedrakyan
University of Minnesota
tigrans@physics.umn.edu

Boris Shklovskii
University of Minnesota
shklovsk@physics.umn.edu

Brian Skinner
University of Minnesota
bskinner@physics.umn.edu

Inti Sodemann
University of Texas at Austin
sodemann@physics.utexas.edu

Semere Tadesse
University of Minnesota
tadesse@physics.umn.edu

Chushun Tian
Tsinghua University
tth@tth.unicn.de

Maxium Vavilov
University of Wisconsin
vavilov@wisc.edu

Xiaoyu Wang
University of Minnesota
xiaoyu@physics.umn.edu

Ziran Wang
University of Minnesota
zwang@physics.umn.edu

Chien-Te Wu
University of Minnesota
wu@physics.umn.edu

Amir Yacoby
Harvard University
yacoby@physics.harvard.edu

Chi-Deuk Yoo
University of Minnesota
yoo@physics.umn.edu

Daehan Yoo
University of Minnesota
yooxx094@umn.edu

Nathan Youngblood
University of Minnesota
youn1476@umn.edu

Michael Zudov
University of Minnesota
zudov@physics.umn.edu
INSTRUCTIONS FOR UPLOADING TALKS TO THE CONFERENCE WEBSITE

Please submit a PDF (preferred format) of your talk slides by Friday, June 7, 2013 to be included in the conference web archive. Please include your name in the file name.

1. Use the following link to access the folder, 2013 EIG Workshop:
   https://netfiles.umn.edu/xythoswfs/webview/_xy-15190281_1

2. Click on the “Upload” icon at the top right of the page.

3. Select your file and click “Start Upload”. The screen should display this message: “The document was successfully uploaded to the folder, 2013 EIG Workshop” It may also tell you that the directory is empty, but this just means that you may not have permission to see the files.

All submitted talks will be archived online for general access at the University of Minnesota’s Digital Conservancy. By submitting your talk slides you are agreeing to the Digital Conservancy’s Copyright policy. For policy details see the website at: http://conservancy.umn.edu/pol-copyright.jsp

Please note that there will be a delay between your upload and final posting on the workshop website. Once all talks have been submitted, participants will be notified by email. As always, any questions may be addressed to eig2013@physics.umn.edu.

These instructions are also available online at: http://www.ftpi.umn.edu/workshops/2012-2013/eig2013/program.html

WIRELESS INTERNET

Workshop guests may access the University of Minnesota wireless network ‘UMNGuest’ without the need of any special login information or passwords. This unsecured network requires that you provide an email address on the homepage (which you will be redirected to upon opening your browser). If you require a secure internet connection, please inquire with staff.
ADDITIONAL INFORMATION

1) **FTPI**: 116 Church Street SE

2) **Hotel**: The Commons Hotel (formerly University Hotel Minneapolis)

3) **Dinner**: Coffman Memorial Union (4th floor, West Wing) Saturday, May 4 at 6:00 PM

4) **Workshop Location**: Mayo Memorial Auditorium (Enter from Church Street SE or Delaware St SE)