



The Abdus Salam  
**International Centre  
for Theoretical Physics**



## Workshop on Majorana Fermions, Non-Abelian Statistics and Topological Quantum Information Processing

Organizer(s): Y. Oreg, G. Rafael, A. Stern, F. von Oppen. Local Organiser: Mikhail Kiselev  
Trieste - Italy, 20 - 24 August 2012

### Preliminary Programme

#### Monday, 20 August

20 August 2012

- 08:30 - 09:30**      **Registration and Administration**
- 09:30 - 09:40**      **OPENING**
- 09:40 - 10:20**      **Piet W. Brouwer / Freie Universitaet Berlin, Germany**  
**Subgap states in Majorana wires**
- 10:20 - 10:40**      --- Coffee Break ---
- 10:40 - 11:20**      **D. Meidan / Dahlem Center for Quantum Complex Systems, Germany**  
**Near zero energy end states in topologically trivial nanowires**
- 11:20 - 12:00**      **Liang JIANG / California Institute of Technology, USA**  
**Magneto-Josephson Effects in Junctions with Majorana Bound States**
- 12:00 - 14:00**      --- Lunch ---
- 14:00 - 14:40**      **Leo Kouwenhoven / Delft University of Technology, Netherlands**  
**Majorana fermions in nanowires**
- 14:40 - 15:20**      **Hongqi XU / Lund University, Sweden**  
**Majorana Fermions in InSb Nanowire-Superconductor Hybrid Quantum Devices**

- 15:20 - 15:40 --- Coffee Break ---
- 15:40 - 16:20 **Anindya Das / Weizmann Institute of Science, Israel**  
**Evidence of Majorana fermions in an Al-InAs nanowire topological superconductor**
- 16:20 - 17:00 **Vladimir Manucharyan / Harvard University, USA**  
**Superconducting proximity effect and interaction-induced zero-energy resonances in a phase-biased Al/InAs/Al junction**
- 18:00 - 20:00 --- WELCOME DRINK ---

## Tuesday 21, August

21 August 2012

- 09:00 - 09:40 **James P. Eisenstein / California Institute of Technology, USA**  
**Competing Phases and Thermoelectric Transport in the N=1 Landau Level**
- 09:40 - 10:20 **Robert Willet / Bell Laboratories, Murray Hill, USA**  
**Non-Abelian Properties in Interference Measurement Results at 5/2 Filling Factor**
- 10:20 - 10:40 --- Coffee Break ---
- 10:40 - 11:20 **Steven H. Simon / Oxford University, UK**  
**Comments on Quantum Hall Interferometry Experiments**
- 11:20 - 12:00 **Woowon KANG / University of Chicago, USA**  
**Measurement of the Braiding Statistics of Anyons in the Fractional Quantum Hall Effect**
- 12:00 - 14:00 --- LUNCH ---
- 14:00 - 14:40 **Daniel Loss / University of Basel, Switzerland**  
**Transition from fractional to Majorana fermions in Rashba nanowires**
- 14:40 - 15:40 **CONTRIBUTED TALKS: (1) Enhanced zero-bias Majorana peak in disordered multi-subband quantum wires (F. Pientka) (2) The 'hidden' zero mode in phase slips in topological superconducting wires (D. Pekker) and (3) (P. Simon)**
- 15:40 - 16:00 **Small Break**
- 16:00 - 17:00 **C. Beenakker / University of Leiden, Netherlands**  
**COLLOQUIUM : The search for Majorana fermions in superconductors**
- 17:00 - 19:00 **POSTER SESSION**

## Wednesday, 22 August

22 August 2012

- 09:00 - 09:40 **David Hsieh / Massachusetts Institute of Technology, USA**  
**Seeing and controlling the surface states of a topological insulator with ultrafast lasers**
- 09:40 - 10:20 **Karsten Flensberg / University of Copenhagen, Denmark**  
**Parity qubits and poor man's Majorana bound states**

- 10:20 - 10:40 --- Coffee Break ---
- 10:40 - 11:20 **C. Beenakker / University of Leiden, Netherlands**  
**Weak anti-localization in a Majorana nanowire**
- 11:20 - 12:00 **Xiaoliang QI / Stanford University, USA**  
**Detecting time-reversal invariant topological superconductors by Josephson effect**
- 12:00 - 14:00 --- LUNCH ---
- 14:00 - 17:00 **EXCURSION followed by Conference Dinner**

#### Thursday, 23 August

23 August 2012

- 09:00 - 09:40 **Sankar DAS SARMA / University of Maryland, USA**  
**Majorana quasiparticles in hybrid semiconductor structures**
- 09:40 - 10:20 **Roman Lutchyn / Microsoft Station Q, USA**  
**Majorana modes in semiconductor nanowires**
- 10:20 - 10:40 --- Coffee Break ---
- 10:40 - 11:20 **Eran Sela / University of Cologne, Koeln, Germany**  
**Heisenberg-Kitaev model: Topological liquids, order by disorder, and emergent Coulomb phases**
- 11:20 - 12:00 **Anton Akhmerov / Leiden University, Netherlands**  
**Manipulation of coupled Majorana fermions**
- 12:00 - 14:00 --- LUNCH ---
- 14:00 - 14:40 **Jason Alicea / University of California, USA**  
**Universal transport signatures of Majorana modes in superconductor-Luttinger liquid junctions**
- 14:40 - 15:20 **Erez Berg / Harvard University, USA**  
**Non-abelian statistics of Fractionalized Majorana Fermions - Part I**
- 15:20 - 16:00 **Netanel H. Lindner / California Institute of Technology, USA**  
**Non-abelian statistics of Fractionalized Majorana Fermions - Part II**

#### Friday, 24 August

24 August 2012

- 09:00 - 09:40 **Julia Meyer / CEA Grenoble, France**  
**Topological Josephson junctions out of equilibrium**
- 09:40 - 10:40 **CONTRIBUTED TALKS: (1) Strongly interacting Majorana modes in an array of Josephson junctions (F. Hassler) (2) Transport signatures of Yu-Shiba-Rusinov bound states in spinful quantum dots coupled to superconducting leads (J. Paaske) (3)**
- 10:40 - 11:00 --- Coffee Break ---

**11:00 - 11:40**     **Jay Deep SAU / *Harvard University, USA***  
**Creation, detection and robustness of Majorana fermions in nanostructured systems**

**11:40 - 11:50**     **CLOSING REMARKS**

**12:00 - 14:00**     --- LUNCH ---