



## The 6<sup>th</sup> Windsor Summer School

### Low-Dimensional Materials, Strong Correlations, and Quantum Technologies

Cumberland Lodge, Great Park, Windsor, UK

14-26 August 2012

[www.lancs.ac.uk/depts/esqn/windsor12](http://www.lancs.ac.uk/depts/esqn/windsor12)

We wish to thank the following sponsors for their contribution to the success of this School:  
Simons Foundation, European Science Foundation, Max-Planck-Institut für Festkörperforschung and I2CAM



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# Lecture Programme

I. Aleiner (Columbia NY)

Single-particle and many-body localisation in disordered systems

B. Altshuler (Columbia NY)

Weak lasing of exciton-polariton condensates

A. Cleland (UCSB)

Mechanical and electromagnetic resonators in the quantum regime

N. Cooper (Cambridge)

Synthetic gauge fields for ultracold atoms

V. Falko (Lancaster)

Known and unknown about graphene

L. Glazmann (Yale)

I. One-dimensional quantum liquids; II. Quantum phase slips

I. Grigorieva (Manchester) Magnetic properties of graphene and graphene paper

S. Gueron (Orsay)

The mesoscopic superconducting proximity effect: from metals to molecules

V. Gurarie (U Colorado at Boulder)

I. Classification of topological insulators;

II. Introduction to cold atoms, from Feshbach resonances to BCS-BEC crossover

M. Inguscio (Florence)

Quantum simulations with ultra-cold atoms in optical lattices

D. Loss (Basel)

Spin qubits and hyperfine interactions

H. Manoharan (Stanford)

Engineering of 2D crystals by atomic manipulation on surfaces of metals

G. Mele (U Pennsylvania)

Topological insulators

W. Metzner (MPI-Stuttgart)

Renormalisation group theory

Sir K. Novoselov (Manchester)

Graphene and other two-dimensional materials - experiment

Y. Pashkin (Lancaster)

Quantum metrology with superconducting qubits

M. Plenio (Ulm)

Quantum information and quantum dynamics

A. Yacobi (Harvard)

Strongly correlated states in one- and two-dimensional systems

# Timetable

## Week 1

	14 Aug Tue	15 Aug Wed	16 Aug Th	17 Aug Fr	18 Aug Sat	19 Aug
8:00-9:00	arrival and registration	breakfast	breakfast	breakfast	breakfast	breakfast
9:00		Metzner	Loss	Metzner	Cooper	free day
10:00		Metzner	Loss	Metzner	Cooper	
11:00		break	break	break	break	
11:30		Pashkin	Yacoby	Loss	Gurarie - II	
13:00	lunch	lunch	lunch	lunch	lunch	
14:30	arrival and registration	Glazman	Gurarie - I	Glazman	Gurarie - II	
15:30		Glazman	Gurarie - I	Glazman	Falko	
16:30		break	break	break	break	
17:00	reception	Yacoby	Pashkin	discussions	Falko	
18:15-19:30	dinner	dinner	dinner	dinner	dinner	dinner
19:30	opening	social time	tutorial – Glazman, Metzner	social time	social time	

## Week 2

	20 Aug Mon	21 Aug Tue	22 Aug Wed	23 Aug Th	24 Aug Fr	25 Aug Sat	
8:00-9:00	breakfast	breakfast	breakfast	breakfast	breakfast	breakfast	
9:00	Mele	Aleiner	Mele	Aleiner	Novoselov	Plenio	
10:00	Mele	Aleiner	Mele	Aleiner	Novoselov	Plenio	
11:00	break	break	break	break	break	break	
11:30	Altshuler	Cleland	Inguscio	Gueron	Plenio	Aleiner	
13:00	lunch	lunch	lunch	lunch	lunch	lunch	
14:30	Altshuler	discussions	Inguscio	discussions	Manoharan	Gueron	
15:30	Cleland	Poster talks I chair: Cheianov	Falko	Poster talks II chair: Cheianov	Manoharan	Gueron	
16:30	break		break		break	break	break
17:00	Cleland		Falko		Inguscio	Grigorieva	
18:15-19:30	dinner	dinner	dinner	dinner	Conference dinner	dinner	
19:30	tutorial- Mele	Poster Session I	tutorial-Aleiner	Poster Session II		social time	