Young Theorists' Forum

Durham, 18th - 19th December 2013

The Young Theorists' Forum kicks off on Wednesday 18th December with registration in the Department of Mathematical Sciences which is followed by lunch in Collingwood College, kindly provided by the ATM.

There will be a series of 15 and 30 minute talks with the final 2 and 5 minutes (respectively) reserved for questions. Talks will be collected into parallel sessions punctuated by tea breaks. These will all be held on the first two floors of the Department of Mathematical Sciences. A detailed session timetable and a full list of abstracts and participants can be found below.

We are delighted to welcome Prof. Lionel Mason from Oxford, who will be giving the plenary talk on Wednesday evening. Following this, we invite you to attend the "Poster and Pizza" session, which will be held in the Institute for Particle Physics Phenomenology (IPPP).

Two more parallel sessions are scheduled for Thursday morning, and the forum will close with a light buffet lunch.

Wednesday 18th December

11.00	Registration (*CM103*)	
12.30	Lunch (*Collingwood College*)	
14.00	1A SUSY Gauge Theories and Amplitudes (*CM221*)	1B BSM Physics (*CM107*)
15.45	Tea & Coffee (*CM103 & CM105*)	
16.15	2A String Theory (*CM221*)	2B Lattice Field Theory (*CM107*)
18.15	Plenary talk: Lionel Mason – (*CG93*)	
19.15	Poster & Pizza (*IPPP area*)	

Thursday 19th December

09.00	3A Gauge Theories and Gravity (*CM221*)	3B Phenomenology (*CM107*)
10.45	Tea & Coffee (*CM103 & CM105*)	
11.15	4A Solitons and M-Theory (*CM221*)	4B Cosmology (*CM107*)
13.00	Lunch (*Bransden Room*)	

SESSION 1A: SUSY GAUGE THEORIES AND AMPLITUDES *Chair: Tim Goddard*

14.00 **Daniele Galloni** (Durham)
The Geometry of On-Shell Diagrams

14.30 **Reza Doobary** (Durham)
Super-correlator, Super-amplitudes and Twistor theory in N=4 Super-Yang-Mills theory

14.45 **Sam Playle** (QMUL)
The Field theory limit of multi-loop string amplitudes

15.15 **James McGrane** (QMUL)
Non-Lagrangian Field Theories

SESSION 1B: BSM PHYSICS *Chair: Daniel Busbridge*

14.00 **Josh Davies** (Liverpool)
Physical Evolution Kernels and α_s^4 Coefficient Function Predictions

14.15 **Sophie Renner** (Cambridge)
LHC constraints on a light baryon number violating sbottom

14.30 **Dave Sutherland** (Cambridge)
Searches for CP-violating dimension 6 electroweak gauge boson operators

15.00 **Gilberto Tetlalmatzi-Xolocotz** (Durham)
New Physics in $\Delta\Gamma_d$

15.30 **Alix Wilcock** (Durham)
POWHEG Method in Herwig++ for BSM Processes

SESSION 2A: STRING THEORY *Chair: Danielle Wills*

16.15 **Felix Haehl** (Durham)
Effective actions for hydrodynamics: transport and anomalies

16.45 **Panagiotis Athanasopoulos** (Liverpool)
Spinor-vector duality in Gepner models

17.00 **Andrej Stepanchuk** (Imperial)
The giant Magnon solution and the dispersion relation in string theory in $AdS_3 \times S^3 \times T^4$ with mixed flux

17.30 **Hasan Somnez** (Liverpool)
Classification of Flipped SU(5) Heterotic-String Vacua

17.45 **Craig Lawrie** (KCL)
Box Graphs and Singularities

SESSION 2B: LATTICE FIELD THEORY *Chair: Gilberto Tetlalmatzi-Xolocotz*

16.15 **Crisanthi Praki** (Swansea)
The Sign Problem in the Presence of an External Magnetic Field

16.45 **Eliana Lambrou** (Edinburgh)
Multi Layer Worlds - A study on the lattice

17.15 **Brian Colquhuon** (Glasgow)
The Υ Spectrum and Semileptonic Decays with NRQCD b Quarks

17.45 **Bipasha Chakraborty** (Glasgow)
Nonperturbative tests of the renormalization of mixed clover-staggered currents in lattice QCD

SESSION 3A: GAUGE THEORIES AND GRAVITY *Chair: Felix Haehl*

09.00 **Omar Valdiva** (Heriot-Watt)
Topological (super)gravity, nonlinear gauge theory and transgression holography

09.15 **Silvia Nagy** (Imperial)
Gravity as the square of Yang-Mills theories

09.45 **David Errington** (Liverpool)
Black Holes in N=2 Supergravity

10.00 **Jurgen Dietz** (Southampton)
Functional renormalisation and quantum gravity

10.30 **Michael Ferlaino** (Swansea)
Higher spin gravity: an overview

SESSION 3B: PHENOMENOLOGY *Chair: Petar Petrov*

09.00 **Gunnar Ro** (Durham)
Leptogenesis in the Classically Scale Invariant Standard Model

09.15 **Jack Medley** (Edinburgh)
High Energy Jets at the LHC

09.45 **Claire O'Brien** (Royal Holloway)
Multichannel mappings for $gg \to l\ \nu_l\ q\ \bar{q}$

10.00 **Marc Thomas** (Southampton)
The MSSM Higgs in the light stop, sbottom and stau scenarios

10.30 **Michael Russell** (Glasgow)
Effective field theory approach to BSM couplings in the top sector

SESSION 4A: SOLITONS AND M-THEORY *Chairs: Rafael Maldonado & Andy Iskauskas*

11.15 **Emanuel Malek** (Cambridge)
The O(D,D) Geometry of String Theory

11.45 **Helen Baron** (Durham)
Integrability in classical systems

12.00 **Thomas Winyard** (Durham)
Monopoles and Skyrmions in Hyperbolic space

12.30 **Chris Blair** (Cambridge)
T-Duality invariant string actions

SESSION 4B: COSMOLOGY *Chair: Jon Davis*

11.15 **Danielle Wills** (Durham)
Dark D-brane Cosmology

11.45 **Russell Kirk** (Royal Holloway)
Dark Matter from Decaying Topological Defects

12.15 **Sam Bartrum** (Edinburgh)
The importance of being warm (during inflation)

Daniele Galloni (Durham): *The Geometry of On-Shell Diagrams*

There has recently been much progress in viewing scattering amplitudes in a combinatorial way. After a brief introduction to the relevant developments, I will show how a geometry can be associated to each on-shell diagram, and how this process makes the singularity structure of the amplitudes transparent. I will also provide a natural candidate for non-planar amplitudes.

Reza Doobary (Durham): *Super-correlator, Super-amplitudes and Twistor theory in N=4 Super-Yang-Mills theory*

In this talk I provide a brief account of a modern formalism for dealing with super-amplitudes and super-correlators of half-BPS operators in N=4 super-Yang-Mills Theory. I shall explain a non-trivial duality that exists between these two observables, and particularly how one may endeavour to find a correlator using this duality together with amplitude data. Finally I will briefly explain on-going correlator computations using Twistor theory directly.

Sam Playle (QMUL): *The Field theory limit of multi-loop string amplitudes*

Far below the string scale α', string theories reduce to gauge theories coupled to gravity. We show how multi-loop string amplitudes in the Schottky parametrization can be used to organize and simplify gauge theory calculations, computing the effective action for a background field as an example.

James McGrane (QMUL): *Non-Lagrangian Field Theories*

I will briefly introduce the subject of non-Lagrangian field theories and Seiberg-Witten theory. I will describe how Seiberg-Witten theory has lead to new dualities between theories that are obtained by wrapping M5 branes on a Riemann surface. In particular, dualities involving non-Lagrangian field theories will be explored. I will also talk about what we can learn about the operator spectrum of these non-Lagrangian theories from the superconformal index and about constructing new theories involving Lagrangian and non-Lagrangian sectors.

Josh Davies (Liverpool): *Physical Evolution Kernels and α_s^4 Coefficient Function Predictions*

Physical kernels describe the energy scale evolution of physically observable structure functions. Making a conjecture about the logarithmic structure of these objects allows for a prediction of the α_s^4 contributions to the coefficient functions of the structure function F_L in the large-x limit.

Sophie Renner (Cambridge): *LHC constraints on a light baryon number violating sbottom*

Most of the LHC searches for supersymmetry (SUSY) have focussed on looking for "R-parity conserving" models, in which the lightest SUSY particle is stable and neutral. The conclusions of these searches don't apply to "R-parity violating" models, which are hence currently less constrained. I will talk about some work I have recently done with my supervisor Ben Allanach on a model of R-parity violating SUSY with the right-handed sbottom as the lightest SUSY particle. This model had been previously shown to explain the Tevatron ttbar asymmetry, if this sbottom has a large coupling to top and down quarks. I will show that large regions in the mass-coupling parameter space of the sbottom are ruled out using recent LHC measurements.

Dave Sutherland (Cambridge): *Searches for CP-violating dimension 6 electroweak gauge boson operators*

I'll talk about proposed searches at the LHC for the CP-violating counterparts of some anomalous triple gauge boson couplings. By thinking about cut-offs in the resulting effective field theories, combined with EDM constraints, I will show that a detectable effect requires new physics at a scale below 170 GeV, making such dedicated searches arguably superfluous.

Gilberto Tetlalmatzi-Xolocotz (Durham): *New Physics in $\Delta\Gamma_d$*

In 2011 the D0 experiment reported a value for the dimuon asymmetry in $p\bar{p}$ collisions that deviates from the Standard Model prediction by 3.9 σ . Recently it was suggested that the gap between theory and experiment can be reduced if the CP violation in interference between the final states of B_d mesons decays is taken into account. It is found that the new CP violation contribution is proportional to the not yet measured decay rate difference $\Delta\Gamma_d$ of neutral B_d particles. The main aim of this talk is to show that the SM value of $\Delta\Gamma_d$ can get a sizable enhancement from New Physics (NP) sources without violating other experimental constraints, indeed It is found that there is room for NP induced by both $b\bar{d}\tau\bar{\tau}$ and tree level operators that can minimize the difference between the theoretical and the experimental results for observables associated with the dimuon asymmetry.

Alix Wilcock (Durham): *POWHEG Method in Herwig++ for BSM Processes*

Monte Carlo parton showers give a good description of QCD radiation in the soft and collinear regions of phase space but fail to describe high transverse momentum (hard) emissions well. The POWHEG approach improves the treatment of these hard emissions by using the NLO QCD real-emission matrix element coming from the hard scattering process to generate the hardest shower emission. In this talk I will introduce the POWHEG formalism and discuss it's implementation in the Herwig++ Monte Carlo generator for Beyond the Standard Model processes.

Felix Haehl (Durham): *Effective actions for hydrodynamics: transport and anomalies*

Holography (fluid/gravity map) has recently caused a great interest in relativistic hydrodynamics. Although hydrodynamics is a typical example of an effective field theory, its traditional formulation is somewhat indirect and ad hoc. A first principles derivation of hydrodynamics in terms of fundamental effective field theory degrees of freedom would be desirable because, among other things, it could give a rigorous explanation of how the hydrodynamic gradient expansion should be constrained. I will present an effective action formalism for (non-dissipative) fluids and demonstrate how it can be used to study transport phenomena, quantum anomalies, and the very nature of hydrodynamics in general.

Panagiotis Athanasopoulos (Liverpool): *Spinor-vector duality in Gepner models*

I will give a very brief introduction to heterotic Gepner models in string theory. I will also introduce the spinor-vector duality that was first observed in free fermionic models, explain its importance and discuss if/how it appears in Gepner models.

Andrej Stepanchuk (Imperial): *The giant Magnon solution and the dispersion relation in string theory in $AdS_3 \times S^3 \times T^4$ with mixed flux*

In the framework of the AdS/CFT correspondence there has been some recent interest in superstring theory on $AdS_3 \times S^3 \times T^4$ supplemented by RR and NSNS 3-form fluxes. This model is classically integrable and its integrability is expected to extend to the quantum level leading to the possibility of determining the exact string spectrum and improving our understanding of the corresponding CFT dual. The essential ingredients in solving for the string spectrum using integrability methods are the dispersion relation for string excitations and the two particle S-matrix. In this talk we address the former question of the exact dispersion relation by considering the dyonic giant magnon solution which corresponds to a bound state of elementary "magnon" string excitations.

Hasan Somnez (Liverpool): *Classification of Flipped SU(5) Heterotic-String Vacua*

We extend the classification of free fermionic heterotic-string models to vacua in which the SO(10) GUT symmetry is broken at the string level to the flipped SU(5) subgroup. Using the classification methods recently adopted, we are able to derive algebraic expressions for the generalised GSO projections for all sectors that appear in the models. This facilitates the programming of the entire spectrum analysis in a computer code. The total number of vacua in the class of models to be classified is $2^{44}\ 10^{13}$. We perform a statistical sampling in this space of models and extract 10^{12} distinct configurations with the flipped SU(5) gauge group..

Craig Lawrie (KCL): *Box Graphs and Singularities*

We study crepant resolutions of singular elliptically fibered Calabi-Yau four-folds by analysing the phases of the Coulomb branch of the 3d N=2 gauge theories arising from the M-theory compactification on the Calabi-Yau. The phases have a description in terms of decorated 'box graphs', and transitions between phases by 'flopping' a path of the graph; these transitions correspond to geometric flop transitions.

Chrisanthi Praki (Swansea): *The Sign Problem in the Presence of an External Magnetic Field*

The phase structure for a charged self-interacting complex scalar field in the presence of a chemical potential and an external magnetic field is studied. The inclusion of a non-zero chemical potential results in a complex action. Numerical approaches using importance sampling cannot be used to solve problems with a complex action, so complex Langevin dynamics are applied to the theory in order to circumvent this problem and allow a numerical study of the system.

Eliana Lambrou (Edinburgh): *Multi Layer Worlds - A study on the lattice*

Many models have been built that visualise our world as a 4D layer embedded in a higher-dimensional world. A common and yet unsolved problem in these models is the gauge-field localization. I will discuss an attempt to dimensional reduce a 5D non-abelian gauge theory to a 4D gauge theory using lattice techniques.

Brian Colquhuon (Glasgow): *The Υ Spectrum and Semileptonic Decays with NRQCD b Quarks*

Key quantities in our understanding of the Standard Model require the ability to accurately simulate heavy quarks in Lattice QCD. In recent years, the charm quark has become light enough in lattice units that it can be given a successful relativistic treatment, whereas we have to extrapolate to the bottom quark from lighter masses. Fortunately, b quarks can be treated using lattice nonrelativistic QCD (NRQCD). Here I will discuss the implementation of an improved form of the NRQCD action on gluon field configurations that include $2+1+1$ flavours of quarks in the sea. I will also present some results from the Υ spectrum as well as results from semileptonic decays of heavy-light mesons with an NRQCD b quark and a HISQ light quark.

Bipasha Chakraborty (Glasgow): *Nonperturbative tests of the renormalization of mixed clover-staggered currents in lattice QCD*

In one-loop lattice QCD perturbation theory, the renormalization constants of vector and axial vector mixed clover-asqtad currents are closely related to the product of those for clover-clover and asqtad-asqtad (local) vector currents. We test the validity of this relationship beyond one-loop by doing a specific non-perturbative test using currents made of clover and Highly Improved Staggered (HISQ) strange quarks on full lattice QCD configurations, utilizing the absolute normalization of the HISQ temporal axial current.We find that the renormalization of the mixed current differs from the square root of the product of the pure HISQ and pure clover currents by 2-3%. We also compare the continuum limit, and approach to it, for clover and HISQ quark determinations of the properties of the ϕ meson.

Omar Valdiva (Heriot-Watt): *Topological (super)gravity, nonlinear gauge theory and transgression holography*

I will show that a topological action for gravity in even dimensions can be obtained from a gravity theory whose Lagrangian is given by a transgression form invariant under the Poincare group. The field ϕ^a, which is necessary to construct this type of topological gravity in even dimensions, is identified with the coset field associated with the non-linear realizations of the Poincare group $ISO(D-1,1)$.

Silvia Nagy (Imperial): *Gravity as the square of Yang-Mills theories*

The division algebras (R,C,H,O) are intimately related to N=1,2,4,8 super-Yang-Mills theories. In three dimensions, we take the tensor product of two Yang-Mills multiplets (with N=1,2,4,8, corresponding to R,C,H,O) - the field content obtained will correspond to various supergravity theories whose global symmetry groups are obtained from the symmetries of the initial YM theories via a mathematical construction called the magic square. We generalise the construction to obtain supergravity theories in 4,6 and 10 dimensions.

David Errington (Liverpool): *Black Holes in N=2 Supergravity*

I will give an overview of the use of dimensional reduction as a solution generating technique in N=2 supergravity. In particular, I will show how the reduction of a 5d theory of n vector multiplets coupled to supergravity can, after making certain restrictions, produce a 4d instanton that can then be dimensionally lifted to give 5d black holes.

Jurgen Dietz (Southampton): *Functional renormalisation and quantum gravity*

Asymptotic safety for gravity refers to the possibility that quantum gravity may be non-perturbatively renormalisable. I will briefly review non-perturbative renormalisation in the framework of the functional renormalisation group and then describe its application to quantum gravity focussing on the so-called f(R) truncation.

Michael Ferlaino (Swansea): *Higher spin gravity: an overview*

In the tensionless limit of string theory, the string excitations become massless and there is an enhancement of the gauge symmetry of the theory. Such a limit is characterised by the presence of an infinite tower of interacting higher spin gauge fields. I provide a lightning review of a theory, three dimensional higher spin gravity, which represents a model for such a regime.

Gunnar Ro (Durham): *Leptogenesis in the Classically Scale Invariant Standard Model*

Classically scale invariant models have been proposed to solve the hierarchy problem of the Standard Model. I will give a brief review of these models and present work on how to include leptogenesis and right handed neutrinos in one such model without introducing new scales.

Jack Medley (Edinburgh): *High Energy Jets at the LHC*

Using the High Energy Jets (HEJ) formalism to describe jet physics at the LHC, we focus on the differences between our all-orders approach and the traditional fixed order methods and then construct the form for scattering amplitudes in the multi-Regge kinematic limit.

Claire O'Brien (Royal Holloway): *Multichannel mappings for $gg \to l\ \nu_l\ q\ \bar{q}$*

The process $gg \to l\ \nu_l\ q\ \bar{q}$ is of current interest as it can occur via a Higgs boson decaying to WW. Interference of the Higgs signal with the dominant W+jets background is expected to be significant as this process can occur at tree level while the signal process occurs via a quark loop. I will discuss calculation of interference and dealing with collinear singularities and competing peak structures in the background process using multi-channel mappings for the monte carlo integration.

Marc Thomas (Southampton): *The MSSM Higgs in the light stop, sbottom and stau scenarios*

We study the effects of light sfermions on the production and decay of the lightest Higgs boson at the Large Hadron Collider (LHC) within the Minimal Supersymmetric Standard Model (MSSM). We find that the scenarios with light stops or sbottoms are able to explain a non-universal alteration in the Higgs production channels (gluon Fusion (ggF) versus Vector Boson Fusion (VBF)) compared to the SM, which is hinted at by current LHC data. We also perform fits of these MSSM scenarios against the LHC data showing that in most cases they fit better than for the SM.

Michael Russell (Glasgow): *Effective field theory approach to BSM couplings in the top sector*

A sensible place to look for new physics effects is the top sector, given the surprisingly large mass of the top in relation to the other quarks. A way of parameterizing these new couplings is the effective Lagrangian approach, where we supplement the SM Lagrangian with additional, higher-dimensional operators, suppressed by powers of 1/ where is the scale of the new physics. This leads to a whole class of additional top couplings, and in this talk I will (briefly!) describe how these couplings can affect observables, and thus, how can use these couplings to constrain new physics effects.

Emanuel Malek (Cambridge): *The O(D,D) Geometry of String Theory*

I will briefly review the T-duality of string theory and how double field theory gives a manifestly T-duality invariant action for 10-d SUGRA at the cost of introducing new coordinates related to the winding modes of strings. Double field theory not only combines the NS-NS sector of 10-d SUGRA into a generalised metric but also combines the infinitesimal symmetries into a generalised Lie derivative. In order to define a covariant derivative with respect to this Lie derivative requires a new geometry which can be built using a flat but torsionful connection. The geometric information is now fully contained in the torsion and I will show how to use this torsion to construct the double field theory action.

Helen Baron (Durham): *Integrability in classical systems*

A short discussion on integrability in classical systems, and the recently introduced concept of quasi-integrability in a modified nonlinear Schrodinger model.

Thomas Winyard (Durham): *Monopoles and Skyrmions in Hyperbolic space*

I will spend some time introducing both monopoles and Skyrmions and discussing some of the differences when working in hyperbolic space, along with some results obtained for static solutions. I will demonstrate that Instanton data can be used to construct monopole solutions as well as yielding a good approximation to static soliton solutions. Finally I will use this to talk about how we might overcome the problems of dynamics for hyperbolic monopoles.

Chris Blair (Cambridge): *T-duality invariant string actions*

I will discuss a construction of worldsheet actions with manifest T-duality invariance for the bosonic string and RNS superstring. This construction is based on Hamiltonian methods, and leads to a picture of the string moving in a doubled space which is essentially the phase space of the string (with T-duality acting naturally as a canonical transformation). Requiring worldsheet reparametrisation invariance allows one to reduce this theory to the usual string, by imposing a form of the section condition of double field theory (a T-duality invariant rewriting of supergravity).

Daniele Wills (Durham): *Dark D-brane Cosmology*

I will discuss a new coupled quintessence scenario from Type IIB string theory, where dark energy arises from the motion of a hidden sector D-brane in a strongly warped region of the compact space, and dark matter arises from the matter fields living on the brane. The form of the coupling between the dark fluids is a precise realisation of the so-called disformal coupling which is ubiquitous in extended gravity theories. Thus this scenario connects phenomenological modified gravity theories with fundamental theory, and in addition gives rise to very viable cosmologies which can ameliorate both the coincidence problem as well as the fine-tuning problem of dark energy.

Russell Kirk (Royal Holloway): *Dark Matter from Decaying Topological Defects*

There is an abundance of indirect evidence for the existence of weakly interacting non-relativistic particles - dark matter. Many modern theories also rely on the existence of a broken symmetry, which may give rise to the formation of topological defects. I will discuss how these topological defects could spew out dark matter in the early universe significantly altering the freeze-out process, and thus present day dark matter physics.

Sam Bartrum (Edinburgh): *The Importance of being warm (during inflation)*

The amplitude of the primordial curvature perturbations is enhanced when a radiation bath of temperature T¿H is sustained during inflation by dissipative particle production. This generically lowers the tensor to scalar ratio and alters the landscape of allowed inflationary potentials with the quartic chaotic potential being in very good agreement with Planck data.

Panagiotis Athanasopoulos	*Liverpool*
Helen Baron	*Durham*
Maien Binjonaid	*Southampton*
Helen Brooks	*Durham*
Bipasha Chakraborty	*Glasgow*
Brian Colquhuon*	*Glasgow*
Natasha Dansey	*Durham*
Jonathan Davies	*Durham*
Jurgen Dietz	*Southampton*
David Edwards	*Edinburgh*
David Errington	*Liverpool*
Daniele Galloni	*Durham*
Timothy Goddard*	*Durham*
Mark Harley	*Edinburgh*
Nick Iles	*KCL*
Andrew Iskauskas	*Durham*
Thomas Jubb	*Durham*
Zac Kenton	*QMUL*
Sheng-Lan Ko	*Durham*
Silvan Kuttimalai	*Durham*
Craig Lawrie	*KCL*
Niall Macpherson	*Swansea*
Emanuel Malek	*Cambridge*
Heather McAslan	*Sussex*
James McGrane	*QMUL*
Thomas Morgan	*Durham*
Claire O'Brien	*Royal Holloway*
Sam Playle	*QMUL*
Sophie Renner	*Cambridge*
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Dave Sutherland	*Cambridge*
Gilberto Tetlalmatzi-Xolocotz	*Durham*
Jennifer Thompson*	*Durham*
Vlad Vaganov	*Swansea*
Lingfei Wang	*Lancaster*
Alix Wilcock*	*Durham*
Danielle Wills	*Durham*
Vaios Ziogas	*Durham*
Sefer Avdiaj	*Prishtina*
Sam Bartrum	*Edinburgh*
Chris Blair	*Cambridge*
Daniel Busbridge	*Durham*
Alexander Cockburn	*Durham*
Djuna Croon	*Sussex*
Josh Davies	*Liverpool*
Paul Dempster	*Liverpool*
Reza Doobary	*Durham*
Susanne Ehret	*Edinburgh*
Michael Ferlaino	*Swansea*
Ben Galloway	*Glasgow*
Felix Haehl	*Durham*
John Heal	*KCL*
Edwin Ireson	*Swansea*
Paul Jennings*	*Durham*
Aoife Kelly	*NUI Maynooth*
Russell Kirk	*Royal Holloway*
Karta Kooner	*Swansea*
Eliana Lambrou	*Edinburgh*
Yang Lei	*Durham*
Rafael Maldonado	*Durham*
Eirini Mavroudi	*Durham*
Jamie McDonald	*Swansea*
Jack Medley	*Edinburgh*
Silvia Nagy	*Imperial*
Alexander Peach	*Durham*
Chrisanthi Praki	*Swansea*
Gunnar Ro	*Durham*
Mark Ross-Lonergan	*Durham*
Dan Schofield	*Swansea*
Dorian Silvani	*Swansea*
Andrej Stepanchuk	*Imperial*
Spyridon Talaganis	*Lancaster*
Marc Thomas	*Southampton*
Jessica Turner	*Durham*
Omar Valdivia	*Heriot-Watt*
Michael Warschawski	*Swansea*
Ryan Wilkinson	*Durham*
Thomas Winyard	*Durham*

* organisers