# *Initiatives in Computing:*
# *Big Data and Numerical Modelling and Simulation*

**What** SEPnet workshops for academic researchers

**When** 21st and 22nd September 2016

**Where** Cosener's House, Abingdon, OX14 3JD

**Who** Those with interest in:

- **Big data in all areas of physics**;
- **Numerical modelling and simulation in condensed matter**.

**Cost** Accommodation and travel costs will be met by SEPnet.

**Registration** e-mail to gradnetadmin@sepnet.ac.uk asap.

The aim of these parallel workshops is to explore opportunities for collaboration and the winning of research funding in computational science across SEPnet. The two workshops will take the form of joint plenary talks and break-out sessions with particular focus on:

- Big Data in all areas of physics;
- Numerical Modelling and Simulation for condensed matter science

***Big Data:*** The forthcoming Alan Turing Institute (ATI) will be a focus for data intensive science in the southeast of England. Within SEPnet, several scientists have been working on university-wide initiatives in Big Data with some local resources committed for these endeavours. This workshop will bring together interested scientists from across SEPnet with a view to sharing ideas and exploring synergies and opportunities, especially in the astronomy and particle physics communities. It will cover academic research in the area of data intensive science, including developing links with the ATI and possible future funding routes through research councils and / or partnerships with business.

***Numerical modelling:*** Strong pockets of expertise in numerical modelling and simulation for condensed matter science across a broad spectrum of length and timescales are embedded right across the SEPnet partners. However, to date little attempt has been made to draw these together. The workshop seeks to showcase activity; to explore some of the big challenges of modelling and simulation and to discuss opportunities for new routes to collaborative research funding especially with business.

***Training and innovation opportunities:*** Both Big Data and Numerical modelling and simulation in condensed matter offer great possibilities for new training and innovation opportunities. At the workshop we will investigate how GRADnet could provide a vehicle for common doctoral training across the network, possibly leading to further funding from the research councils and collaborative funding directly with SME companies. We will also share best practice in collaborative R & D in computational problems with companies.

***Speakers:*** The talk will have a few invited plenary speakers, but ample time for contributed talks and discussions.

***Registration:*** Registration is open. To confirm a place, please send an e-mail to Cristobel Soares-Smith (gradnetadmin@sepnet.ac.uk) asap. In the event of over-subscription, preference will be given to delegates that (i) register early while (ii) maintaining representation from a diversity of interest groups and institutions.

***Convenors:*** Nichol (Ports); Sullivan, Hoenig (Soton.); Oliver (Sussex); McDonald (Surrey).

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| **Day 1: 21st September**<br>Delegates attention is especially drawn to the opportunity to make a short (3 minutes / 2 slides max) presentation on their work and requirements for big data during the morning session. There will not be a formal timetable for this session. Rather contributions will be made in "round-table" format. | | | |
| 10.30 | **Arrival** | | |
| | **RESEARCH: Chair Mark Sullivan** | | |
| 11.00 | Plenary | **Overview of Big Data, Numerical Modelling & Simulation in Physical Science**<br>**Ofer Lahav**<br>Professor Ofer Lahav is Perren Chair of Astronomy at University College London. He served as co-chair of the Science Committee of the Dark Energy Survey from the project's early days until this year. He is also actively involved in many future massive surveys of the sky including DESI, Euclid and LSST, and in applying machine learning methods in Astronomy. He is currently a member of the STFC Science Board. | |
| 11.30 | Plenary | **Metrology and traceability in climate change and energy data**<br>**Marieke Beckmann**<br>Marieke Beckmann is Research Lead at the Centre for Carbon Measurement based at the National Physical Laboratory (NPL). She manages climate, energy and sustainability projects, devises low carbon strategies in collaboration with scientists across the laboratory and is responsible for the EU funded Environmental Technology Verification (ETV) scheme at NPL. The Centre for Carbon Measurement represents the work of 120 scientists on climate science, emissions monitoring and low carbon technologies. | |
| 12.00 | Discussion | An open discussion focusing on research opportunities. | |
| 12.30 | **Lunch** | | |
| 13.30 | Parallel breakouts | Data analysis and Science<br><br>Getting to know each other. Short, contributed presentations from each partner. | Numerical modelling and simulation<br><br>Getting to know each other. Short contributed presentations from each partner. |
| 15.00 | **Coffee Break** | | |
| | **INNOVATION: Chair Bob Nichol** | | |
| 15.30 | Plenary | **Innovation and Impact from Research**<br>**John Bancroft**<br>Professor Bancroft is Director of NPL North of England and a member of the University of Huddersfield's Centre for Precision Technologies (CPT). John graduated as a chemist from UMIST. He was formerly the first Director of the Hartree Centre and Head of Campus Centres at STFC where he helped to secure £70M of capital investment from the UK Government into STFC. | |
| 16.10 | Plenary | **Innovation and Inter-disciplinary Research**<br>**Michèle Weiland**<br>Dr Weiland is a Project Manager at EPCC, the supercomputing centre at the University of Edinburgh. She has many years of experience in leading collaborative research projects, ranging from phylogentics to the modelling of fog dissipation. | |
| 16.50 - 18:00 | Discussion | A round table debate of about cross-disciplinary research and innovation opportunities.<br>*Is it possible and is there funding?* | |

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| 19.00 | **Reception / Dinner** |

| **Day 2: 22nd September** | | | | |
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| | **TRAINING: Chair Peter McDonald** | | | |
| 09.30 | Plenary | **Training in Big Data**<br>**Seb Oliver**<br>Seb Oliver, University of Sussex, is Professor of Astrophysics and Director of Research and Knowledge exchange for the School of Mathematical and Physical Sciences. He is currently chair of STFC's Education, Training and Careers Committee. His main expertise is in construction and exploitation of large surveys of galaxies to which he applies novel statistical analysis techniques. He has been applying data analysis techniques outside astronomy, especially health. | | |
| 10.00 | Discussion | Joint discussion of training opportunities in big data and numerical modelling, especially in the context of GRADnet | | |
| 10.45 | **Coffee Break** | | | |
| 11.15 | Breakouts (precise topics to be agreed pre-coffee) | Data Intensive CDT | Other opportunities 1 | Other opportunities 2 |
| 12.45 | **Lunch** | | | |
| 14.00 | Plenary | **Feedback and Summary**<br><br>Throughout the workshop, the conveners will collect themes, opportunities and challenges from our discussions. Each convener will take 10 mins to offer summaries of these items.<br><br>**Nichol: Innovation**<br>**McDonald: Training**<br>**Sullivan: Research**<br><br>Joint discussion of these summaries and proposals for future collaboration and coordination. | | |
| 15.30 | **Formal close** | | | |

## *Delegate List*

| First Name | Surname | Institution | Contact E-mail | Hotel |
|---|---|---|---|---|
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