

Physics by the Lake is the UK national summer school on theoretical condensed matter physics, aimed at PhD students towards the end of their first year. The aim is to create a national cohort of theorists, crosscutting the PhD graduate system dominated by applications-focussed CDTs

It is organised by the Higgs Centre for Theoretical Physics and the Institute of Physics (IOP) Theory of Condensed Matter group, with support from CECEAM, UKCP, CCP5 CCPmag, CCP9 and psi-k. It consists of two weeks of high-quality lecture courses by experts in the field, as well as tutorials to give thorough training in solving real problems. There is also a series of after-dinner seminars. The main organisers are Graeme Ackland (Edinburgh), Richard Blythe (Edinburgh) and Sam Carr (Kent).

Other main lecturers were Derek Lee, Niels Walet, Ed McCann, Andrew Fisher, Buddhapriya Chakrabarti and Chris Hooley, covering areas such:

- Correlated Quantum Fluids (CQF)
- Electrons in Solids (ELS)
- Mesoscopic Physics (MES)
- Quantum Information Processing (QIP)
- Soft Condensed Matter (SCM)
- Statistical Mechanics (STM)
- Strongly Correlated Quantum Systems (SCQ)
- Topological Phases of Matter (TOP)

The 2019 *Physics by the Lake* summer school took place at the University of Stirling from August 5-16 2019.

The end-of-course questionnaires were highly favourable, students particularly appreciating the networking opportunities and the time available to concentrate in depth on the broad range of material unavailable in their own PhD training. There was a strong steer from students that we should continue with the event.

The training environment in EPSRC remains dominated by CDTs which are now almost fully applications-based. Other funding for training is devolved to Universities. This approach has much to commend it, but it produces unique challenges for delivering technique-based training at a national level.

For experimental physicists the central facilities offer excellent opportunities for training, and for Computational Physicists there are the longstanding Computational Collaborative Projects (CCPs) with associated summer schools. UKRI supports high-energy physics theory through the BUSSTEPP school, their equivalent to PbtL. Condensed matter theorists are uniquely disadvantaged.

Physics by the Lake remains the only and essential opportunity for training in Condensed Matter Theory. The funding remains precarious, but the main conclusion is that we must endeavour to continue