From the CM-DTC Director - Prof Andy Mackenzie

I am glad to say that CM-DTC continues to flourish. This year has seen a record number of extremely high quality applications from students wishing to enrol, and we are set to exceed our target student number in September 2012. Since the last newsletter the EPSRC has conducted a mid-term review of all their Centres for Doctoral Training. We fared well with the panel's written comments showing they appreciated what has been achieved. The panel recommended we establish a permanent International Advisory Board, to complement the rolling arrangement we had in place. We are grateful to Professor Peter Littlewood FRS for agreeing to chair the Board. Peter was formerly Head of the Physics Department at Cambridge, and is now Associate Laboratory Director at Argonne National Laboratory, one of the USA's foremost research institutions. Peter lectured at our Summer School on Condensed Matter Physics and Energy and so has already been in direct contact with our students. The Summer School on the condensed-matter physics underlying alternative energy sources to fossil fuels was one of the highlights of last year, featuring lectures from physicists, chemists and technologists from around the world. It was well attended by 27 CM-DTC and 7 external students and highly rated in the post-event questionnaires.

From the CM-DTC Director of Training - Dr Chris Hooley

With the CM-DTC now in its third year of operation and thirty-three PhD students on its books, the provision of taught courses is getting closer to its 'steady state'. Let me, then, highlight the three courses that do not fit that mould, being completely new to the DTC this academic year. The first of these was created at the students’ direct request: a six-lecture mathematics primer delivered by Dr Patrik Öhberg (Heriot-Watt) at the beginning of semester one. The second is a sixteen-lecture course on light-matter interactions, given by Dr Jonathan Keeling (St Andrews), who joined SUPA last year from his previous post in Cambridge. The third new course is “Advanced Condensed Matter Physics”, delivered by Dr Santiago Grigera (La Plata / St Andrews) dealing with various topics in condensed matter at a well-above-introductory level. Finally, let me mention this year’s incarnation of the Probes of Condensed Matter course covering the broadest range of probes of both soft and hard condensed matter to date, as well as featuring Dr Ilya Sheikin (CNRS Grenoble) and Professor Joe Orenstein (Berkeley) as guest lecturers.

In total we are offering twelve courses this academic year, in addition to the wide range of graduate-level courses available through our agreement with the Scottish Universities Physics Alliance. This is only possible through the commitment and hard work of all the staff (and the students!); but particular recognition and grateful thanks go to Dr Julie Massey and Mrs Christine Edwards, who handle a huge amount of administrative work ensuring the Centre’s smooth running.

Retreat at Firbush - 2012 (April 16-18). DTC student Edmund Bennett

This year’s CM-DTC retreat was organised and attended by the DTC-students at the Firbush Point activities centre (University of Edinburgh). It combined a wide range of talks, from invited speakers (university research staff and visitors) and students, with the opportunity to enjoy mountain biking, kayaking, rowing and a range of other sports in a beautiful location at Loch Tay. Feedback was that the invited talks were at just the right level and the student talks were well received, especially those with a non-academic theme, for example on job prospects beyond a physics PhD. The sporting activities were popular and enjoyable (despite the challenges of the Scottish climate).

Looking forward to next year, what might we do differently? Many of the students commented that they would have liked to have the opportunity to talk with the invited speakers immediately following their talks in a more informal social atmosphere. Scheduling the talks earlier to allow this has to be balanced against demands from other students for more time outdoors. Although the sporting activities were popular a number of students have suggested the addition of team activities at future retreats to increase the cohesiveness between different enrolment years. The feeling of several (including myself) was that the more relaxed atmosphere of The Burn (the location for last year’s retreat) was more conducive to a reflective physics retreat, although not offering the range of activities available at Firbush.
Industrial Associates – DTC student Thomas Scheler describes his short placement at Edinburgh Instruments Ltd:
My appetite was whet to find out more about working in industrial research by the industrial associates’ talks at last year’s careers event. This led to me taking a 7 week break from my PhD earlier this year, to work in the R&D division of Edinburgh Instruments Ltd, a medium-sized company producing and developing, amongst other things, fluorescence spectrometers. During my placement I was fully integrated in the daily routine and worked on developing benchmark tests for novel grating spectrometers – not dissimilar from the instruments I have been using in my PhD. The differences from my PhD work that struck me were the shorter deadlines and consideration of consumer interests. Like other students, I am used to deadlines in my PhD for submitting conference abstracts, research proposals and project reports. I feel, however, that the potential consequences if I ever failed to meet these, would largely be confined to me, whereas failing to meet a deadline in a company, such as delivering a product late, would be much more serious. The focus of my work at Edinburgh Instruments was on someone else’s (ultimately a customer’s) project and delivering a fully working product, which contrasts with longer term aims and greater freedom of my PhD. This meant spending much more time than I anticipated on user interfaces and ergonomics, things that might be considered a distraction from ‘the science’ in my PhD.

I worked as part of a team of many highly skilled individuals, most of whom had a university background, most with PhDs and some having completed postdoctoral positions before moving to industry. I enjoyed working in their team and appreciate how well integrated they made me feel. Previously, I had only experienced life in an academic environment and at national laboratories. The placement taught me a lot and I feel much better informed about the career decisions I will need to make. I strongly recommend a similar experience to other students.

American Physical Society March Meeting – DTC student Feli Beichert
The March Meeting of the APS is the biggest meeting of Condensed Matter Physics in the world. This year it took place in Boston with a record-breaking 11,000 attendees. Just by looking at the number of attendees, it is difficult to grasp the sheer size of the conference. It means that there are 54 parallel sessions in each timeslot. Consequently, whenever one enters the building, one is guaranteed to miss over 98% of the talks. Nonetheless, it was very exciting to see some of the greatest minds in Condensed Matter Physics, like Phil Anderson or Paul Chaikin, talk about the most recent developments in the field. The variety of topics at the meeting was incredibly broad, ranging from more traditional Physics topics like high-temperature superconductivity and graphene physics to the physics of cancer and evolutionary systems. The meeting comprises both Focus Sessions with short 10-minute talks to allow experts in the field to find out about new developments and Invited Sessions with longer contributions offering the opportunity to get an overview of fields outside one’s own. The social aspect is important with collaborations formed and revived during discussions in the hallway.

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