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For further details visit: www.dur.ac.uk/cmp
1. Welcome to the Centre for Materials Physics

Welcome to the Centre for Materials Physics in Durham! Durham is one of the most beautiful cities in England with a vibrant friendly academic community producing world-leading research. If you have embarked on a Ph.D. in our Centre, we invited you because you have the potential to produce excellent research and we are confident that the journey you are about to embark on will be a fabulous experience for you and the people around you. If you are a new member of the research staff, you will find researchers who are passionate about their work!

Materials Physics provides a wonderful research area to develop a broad range of scientific skill, knowledge and understanding. Setting any false modesty aside – we believe you have joined one of the best physics departments in the world. Of course, our alumni are our best ambassadors. They are world-class research scientists, industrial managers, patent lawyers, consultants and scientific advisors for institutions and governments... to name but a few. I recommend that you throw yourself into the scientific culture after you arrive – work hard, play hard, and publish some world-class research!

Have fun!

Professor D. P. Hampshire
Director of the Centre for Materials Physics, Durham University.

Introduction to the Centre for Materials Physics in Durham University

This booklet is primarily written for new core academic staff, PDRAs and postgraduates who have recently joined us at the Centre for Materials Physics at Durham University to study for a Ph.D. in Physics. If you are reading the Handbook in hard copy, there is an electronic version (on the web) with live links at: http://www.dur.ac.uk/cmp/training/resources/. In the Physics Department, students are supervised by staff in one of five sections:

- Advanced Instrumentation
- Astronomy and Astrophysics
- Atomic and Molecular Physics
- Condensed Matter Physics
- Elementary Particle Theory

Ph.D. or M.Sc. degrees in the area of ‘Condensed Matter Physics’ or ‘Materials Physics’ are supervised by staff in the Centre for Materials Physics – which assumes primary responsibility for the teaching, training and research undertaken by Ph.D. Students. Many of the staff in the Centre are also members of other research centres and institutes throughout the University and as a result are able to offer interdisciplinary Ph.D. research projects.

Materials Physics encompasses a huge range of science from technological advances such as liquid crystal displays to fundamental understanding of phenomena such as superconductivity, advanced many-body quantum-mechanics and elementary spin-charge interactions. Durham University has world-class researchers working across Materials Physics collaborating with the best groups around the world.
We employ a wide variety of different experimental methods including optical, magnetic, electrical, microscopy, magnetic resonance and X-ray scattering measurements. Theoretical work, often in close collaboration with experiment, is a vital aspect of condensed matter physics and in Durham, studies include multi-scale computational modelling and theory from the level of the electrons to photonic microstructures. Experiments and computational simulations are supported by state of the art equipment based in the Department and elsewhere in the University, including femtosecond lasers, scanning probe microscopes, electron microscopes, SQUID (Superconducting Quantum Interference Device) magnetometers, a range of cryostats (300 mK to 1000 K), horizontal and vertical magnets (up to 17 T) and a supercomputer cluster. Extensive use is made of international facilities including synchrotron radiation, neutron and muon sources, high field magnets and supercomputers.

2. CMP Staff Officers/CMP Society and The Physics Department

Naturally staff/students have taken up research administration responsibilities for the common good of the Centre. Up-to-date information is on the CMP web-pages at [www.durham.ac.uk/cmp](http://www.durham.ac.uk/cmp) – If the data are not accurate, please let the member of staff know and they can ask the ‘Physics Audio Visual Supervisor’ (see below) to update the pages.

Director of CMP/Head of Section: Prof. Hampshire
Deputy Director of CMP: Dr. Halliday
CMP Secretary – Staff Meetings: Dr. Szablewski
CMP Pgrad Comm. and Admissions Staff Member: Dr. Halliday
CMP Postgraduate Lecture Course Organiser: Dr. Atkinson
CMP Seminar Organiser: Prof. Clark
CMP Space and Intern. Facilities Laboratories Organiser: Dr. Terry
CMP Society Academic Chair: Dr. Bromley
CMP Recruitment Open Day Organiser: Dr. Szablewski
CMP Staff Member for Overseas Recruitment: Dr. Hunt
CMP Intergroup Meetings Staff Member: Dr. Lancaster
CMP Away Day Organiser: Dr. Bromley
CMP Website Organiser: Dr. Fielding
CMP Nature and Science Club Organiser: Prof. Hatton
CMP Society Student Chair: Lara Small
CMP Society Academic Chair: Dr. Bromley
CMP Society Members: Paul Tulip, Tom Beale, Robyn Moorcroft, Tom Frawley, Peter Byrne, Ewan Hemingway, Paul Dean

Intergroup Meeting Student Chairs
Research Groups Webpage Contacts

Condensed Matter Theory                          Peter Byrne
Soft Matter and Biological Physics             Lara Small
Organic Opto-Electroactive Materials          Gareth Griffiths
Inorganic Opto-Electroactive materials        Dr. Mendis
Photons, Sensors and Materials                 Adam Berlie
Muon Physics                                    Dr. Lancaster
Nanoscale Science and Technology              Alex Webb
Superconductivity                               Mark Raine
X-ray Scattering and Magnetism                 Matteo Fossati

Physics Department Staff

Head of Department                             Prof. M. Ward
Director of Operations                         Dr. Clare Woodward
Resources Administrator                        Claire Davies
Research Administrator                        Penny Carse
Teaching Administrator                         Adrian Skelton
Departmental Administrative Secretary          Helen Dabill
Postgraduate Administrator                    Joanne Richardson

Technical Services

Departmental Supervisor                        Norman Thompson
Mechanical Workshop Supervisor                 Steve Lishman
Mechanical Workshop Academic Staff Contact    Prof. Hampshire
Electronics Workshop Supervisor                John Scott
Electronics Design and Development Workshop Manager Tom Jackson
Electronics Workshop Academic Staff Contact    Prof. Girkin
Research and Teaching Technicians’ Supervisors Norman Thompson
Research and Teaching Academic Staff Contact   Wayne Dobby
Physics IT Manager                             Dr. Hughes
Physics IT Academic Staff Contact              J. Hinson
Physics Audio Visual Supervisor                Prof. Clark
Audio Visual Academic Staff Contact           Greg Robson
Electron Microscopy Manager                    Prof. Clark
Experimental Officer                          Dr. B Mendis
Health and Safety Co-ordinator                 Leon Bowen
Audio Visual Academic Staff Contact           Duncan McCallum
3. Induction and Registration

The Physics Department organises an induction course at the beginning of October (before the start of term) which includes a small series of University-run training sessions. Staff, PDRAs and postgraduates are welcome to ask the Departmental Postgraduate Administrator for the materials/documentation associated with Induction and Registration shortly after they arrive. Make sure to attend the Welcome Session generally given by the Head of the Physics Department where the schedule for the induction sessions is explained. If you arrive at another part of the year (many people in the Centre do), please ask for the induction and registration materials from the Postgraduate Administrator and discuss them with your mentor/supervisor. Make sure by checking http://www.dur.ac.uk/cmp/members/ (and following up with the Departmental Administrative secretary if you do not appear) that you are on the Departmental database - this ensures that the Head of Department knows you are here, that people can find out how to contact you and that you are on relevant mailing lists for information. Please also read the section in this CMP Handbook on safety and fill out relevant documentation and ask the Departmental Administrative Secretary where you can get the Computing and Information Services (CIS) registration form and give it to the Departmental Administrative Secretary who can arrange to have it signed (by relevant staff in batches).

4. An academic career - new core academic staff (only).

‘The world is your oyster’ - do the very best science you can and build your own world-class scientific environment around you! The material below contains a series of suggestions we currently have that you might consider to enable you to achieve these two things. You have a fabulous job - with enormous latitude about what you choose to do and who you choose to work with. Government ministers/funding agency priorities and senior University staff will come and go! Work smart and hard, publish in Nature and/or Science, and make bold choices!

New core academic (lecturing) staff are given at least one senior academic as a mentor. They are the best source of information about what is expected of you. There is also the University induction course for new members of staff and CIS (i.e. IT) training courses. In the best Socratic tradition, below there are a series of questions that you could ask if you think they can be helpful to ‘break the ice’ with introductions around the Department and some personal comments from the Director of CMP:

General Information:

‘Beauty is truth, truth is beauty’ - There are 4 sources of information you might consider taking a tour of/becoming acquainted with:

i) Physics Departmental web pages: a list of the staff in the Department and outward facing highlights.

ii) The Physics Departmental database: https://admin.physics.dur.ac.uk/ (Undergraduate exam records, student photos, portal for coursework marks, staff absence register, research visitor registration forms, health and safety forms...).

iii) DUO, the University on-line learning environment for undergraduate students: https://duo.dur.ac.uk/webapps/portal/frameset.jsp This is the central portal for information about the undergraduate courses you teach.

iv) The CMP web pages: core staff meetings, Intergroup meetings, seminars...

Unfortunately the University personnel and financial databases are not accessible by staff which can make managing larger research groups more of a challenge.

Research:

Think carefully about what you will need to be a world-class researcher - both as an early career academic and as a senior academic. What sort of impact do you want to have? Which (living) academics do you admire most and why? Go and ask them what they recommend you do to help build a successful career!

Some observations from the Director of CMP: It is absolutely critical that you develop your own funding streams from outside of the University as soon as you can, so you can build your research group. It is important to have a robust research strategy that is sustainable as the research environment changes. We can usefully categorise Physics on different length scales - core research activities including writing research papers, collaborations and funding can also be thought of in this way. Writing research papers can be an activity centred within a research group, an activity across CMP or the University, across the UK or an international collaboration. Every now and again think about whether you have all your important research activities operating on these different length scales - it is an essential part of retaining your research independence and provides important insurance against volatile changes in the research environment. There is no rush, but build collaborations with the best local, national and international scientists (who you also have fun with) you can. If your last two solo proposals were not funded (perhaps your area is temporarily unfashionable with EPSRC), you need to ensure you have different approaches (length scales) available. Building collaborations/trust on the national and international stage takes time and hard work. Some suggestions/comments: Write a proposal every year. A common feature of all successful senior staff in CMP is that they all write grants regularly (typically with a 1 in 3 success rate). Preferably write large grants - but small grants (different funding agency) are also important if you are working on a large grant or you have lots of funding. If you are writing a collaborative grant, make sure that you get real academic capital invested by your collaborators - involve them in discussions and providing text (a touchstone for real engagement) as early as possible; it is a mistake to think after your new appointment that you have to loosen ties with your old boss/supervisor to demonstrate your independence; accept invitations so that you are on at least one national and one international body/committee.

In CMP we currently top slice 50% of the (small) Departmental allocation from staff holding grants in excess of £100 K at Easter. Make sure your grants applications are properly financially structured.

It is very important that academic staff remain academically connected. CMP is very keen to support staff to invite research staff/PDRA/students from elsewhere for short visits to Durham. Staff with limited funds (< £100 K) are welcome to request funds from the HoS to contribute to visitor accommodation costs.

‘Necessity may be the mother of invention’ but don’t wait until you really need something before building your collaborations. This is particularly true of industrial collaborations, where a discussion every six months or co-supervision of a studentship, even if the industrial partner only contributes their time (i.e. no funds), may be a useful way to develop trust/collaborations.

If you are writing your first grant or two, I have been told by a junior staff member to tell you that you must find someone to “shred” your grant. Apparently he lost a little sanity, but secured the £120K. We also have a current list of grants held by all CMP members - remember there are many sources of research funding such as EPSRC, Royal Society, Leverhulme, KTPs, ....

- How do I get promoted? - Mentor or any Professor in the Department.
- How do I submit a grant to EPSRC/The Royal Society? - Mentor or any Professor in the Department.

Lecturing and Continual Personal Development (CPD):

‘Good teachers are born not made’ is nonsense. You can have a lot of fun teaching the students we have in Durham - the vast majority of our students are as good as it gets. Two features of our best lecturers is that they find teaching activities that play to their strengths and they work hard year on year to improve their courses. Most staff (including experienced staff) get tough feedback in their first two or three years of giving a new course.

New members of staff are required to complete a course about lecturing and teaching in the University - this will help
you develop your own teaching strategy which you will need to articulate when you apply for promotion. Thereafter, consider signing up for say 1 day or 2 half-day courses as part of continual professional development (CPD) every year - patent law, special needs, health and safety, new ideas in teaching, academic management, ... are just a few of the areas where you should ensure you are significantly better informed that our smartest post-docs.

The entire undergraduate course is available on the Physics Departmental Web-pages under “For current students and staff” at: http://www.dur.ac.uk/physics/internal/

- What teaching (and administration) do I have next year? - Director of Operations. Who are the best three lecturers in my area? - Chair of Education Committee: www.dur.ac.uk/physics/internal/committees/tlc/ or Directors of Studies: www.dur.ac.uk/physics/students/staffcontact/#dos. What CPD courses do you recommend? - Mentor.

Administration

‘In this world nothing can be said to be certain, except death and taxes’. The Department has a work-load model which gives credit for teaching and administration tasks assigned by the Chair of the Education Committee (and HoD) and administered by the Director of Operations. It provides important transparency in identifying and recognising the tasks that need doing in the Department, and ensures the work is spread fairly amongst staff.

In CMP we also have a workload model. The ‘credit-hours’ are light touch. The CMP work-load model helps us: develop a clearly articulated set of values for the Centre and create a focus for discussing and developing agreed priorities and ‘making them happen’; provide a currency to recognise contribution to the agreed common good; recognise the efforts of staff across a diverse and important range of research-related activities while being simple enough to be transparent; a focus to develop individual aspirations and meet institutional core values.

There are different types of administration: research administration that comes with great research, be that pulling together research proposals or presenting work at the important meetings; research administration within CMP or on various National and International committees and teaching administration on Departmental committees. Large administrative jobs (within the Department) bring some work-load credit. However, bear in mind that there are many smaller jobs that are required as part of building our research community. We don’t want to ‘Bean Count’ every little job and although we don’t want our academics doing administrator tasks (academics are the only people who can write 4* papers in Nature and Science, write research proposals, lead the international research agenda, supervise PhD students, lecture ...), think about giving up to 5% of your time up for (small task) administration within the Department and CMP. We need academics to invite world-class speakers to give seminars, recruit the best potential PhD students with their own scholarships, mentor early career academics, proof read/improve proposals, ... .

Lecturing staff who have an unavoidable diary clash with giving undergraduate lectures should see the Teaching Administrator. For changes to postgraduate lecture courses, staff are asked to ask the Physics Audio Visual Supervisor to update the CMP web-pages (copied to the CMP Postgraduate Lecture Course Organiser for the Centre) and arrange for all students and for all PDRAs who have signed up for the course to be notified.

Organising foreign travel to laboratories/conferences. There is no single point contact: The Departmental secretary formally arranges travel; the Head of the Finance Office has the Departmental credit card for booking registration online and we have a University commercial travel agent who will price match flight costs but without guidance can offer prices that are sometimes double those on-line. It is probably most efficient to identify all bookings yourself and send a request to the Departmental secretary to make all the bookings for you. Make sure to arrange (free) University health insurance before you go https://www.dur.ac.uk/treasurer/local/insurance/travel_assessment/ - don’t take them to HoS/HoD office to be signed. Please complete the travel authorisation form/insurance forms and hand them to the Departmental Administrative Secretary so they can be signed in batches.
Standard post is delivered to your pigeon-hole or kept in the finance office who will send you a notification of its arrival by e-mail. Sending 1st class or overseas post is done in the post room (free) - staff in the general office can show you the procedure. Sending post by DHL is done by the staff in the Finance Office.

University photos are available on the University image management system (IMS) at: [http://www.dur.ac.uk/communications.office/marketing/images/](http://www.dur.ac.uk/communications.office/marketing/images/)

University layout for letters, FAXes and Memos are available at: [http://www.dur.ac.uk/communications.office/marketing/branding/templates/](http://www.dur.ac.uk/communications.office/marketing/branding/templates/).

What's on: [http://www.dur.ac.uk/whatson/family_community/](http://www.dur.ac.uk/whatson/family_community/)

Consider improving your administration skills by encouraging: paperless administration; pointing to web-page notices (rather than sending long e-mails) for all meetings/seminars. Web page notices help retain good practice in future years. They also retain the record of activity which improves our profile for potential students/REF and advertises the research environment in CMP (The University content management system [CMS] system automatically reassigns future listings under past listings when appropriate - [http://www.dur.ac.uk/cmp/meetings/](http://www.dur.ac.uk/cmp/meetings/)...)


### Core Academic Staff Meetings

The Department has formal Board of Examiners and Board of Studies Meetings. All core academic staff are automatically members of these boards and are expected to attend. Dates are advertised on Departmental web-pages at: [http://www.dur.ac.uk/physics/newsandevents/](http://www.dur.ac.uk/physics/newsandevents/)

The core academic staff (i.e. Principal Investigators) within the Centre for Materials Physics hold regular meetings to discuss policy and management issues within the Centre and to celebrate research successes together – generally once a term. Staff should check the CMP web-pages for meeting times/dates.

### Outreach

- I would like (or would like to encourage my PDRA or postgraduate student) to spend 1 day or 2 half-days per year doing some outreach, what can you recommend ? - Director of Science Outreach.
5. Diary Dates for all Members of the Centre

A summary of the types of meetings we have in CMP is available at the back of this booklet. However, do check the updated diary dates and notifications that are posted on the Centre for Materials Physics webpages at: [http://www.dur.ac.uk/cmp/meetings/events](http://www.dur.ac.uk/cmp/meetings/events), [www.dur.ac.uk/cmp/cmp_society/](http://www.dur.ac.uk/cmp/cmp_society/) and [http://www.dur.ac.uk/cmp/meetings/im](http://www.dur.ac.uk/cmp/meetings/im). You can download the content for these events into your diary easily from the web-pages using the iCalendar feature.

Of course we expect ‘apologies’ for absence as a matter of courtesy. If you are a post-graduate or PDRA and there are structural clashes (i.e. not a one-off), please discuss it with your supervisor and write to the Director of the Centre and the CMP officer responsible for the meetings notifying them of your problem as early as possible.

Seminars

**Contact:** CMP Seminar Organiser

Seminars play a critical role in learning new Physics, finding out what's topical, and developing new collaborations. Our Seminars attract many high profile researchers to speak at the Centre for Materials Physics, providing invaluable opportunities to discuss your research with subject experts who are also often potential future employers. Staff, PDRAs and students have a natural interest in ensuring seminars successfully bring high profile researchers to CMP. Be bold - please send you suggestions for speakers to the CMP Seminar Organiser in the summer term for the following academic year. By finalising dates for the following academic year’s seminars during the summer term, we get better speakers and better audiences.

Members of the Centre for Materials Physics also attend seminars in other departments and institutes including the Durham Energy Institute, the Biophysical Sciences Institute and the Chemistry and Engineering Departments. Typically one might expect half the audience in any seminar to be from the host centre or department.

Seminars are usually held on the Wednesday of weeks 2, 4, 6 and 8 of the Michaelmas and Epiphany terms. There is a scheduled lunch buffet from 12.30 – 1.00 pm, with the seminar following shortly after between 1.00 – 2.00 pm. The event will finish with a tour giving the guest speaker the opportunity to meet any members of the Centre who sign up.

As we believe strongly in collaboration we require all (non-core) members of the Centre (e.g. postgraduate students and PDRAs) to attend the seminars, even if the topic is not closely related to their own field of research.

Intergroup Meetings

**Contacts:** CMP Intergroup Meetings Staff Member, Intergroup Meeting Chair

Intergroup meetings are regular meetings between groups of postgraduate students, postdoctoral research associates (PDRAs) and staff on a two-week cycle. There are usually 12 meetings starting before Michaelmas term and 11 meetings around each of Epiphany and Easter term. The essence of these meetings is that you meet people from other research groups. These meetings provide opportunities for research students and PDRAs to find out about research across the Centre for Materials Physics. In particular they help maintain our multidisciplinary research community and provide an opportunity for all to expand their knowledge and research interests and provide a friendly environment to develop presentational skills in Materials Physics. For the location of these meetings - see the CMP web-pages: [http://www.dur.ac.uk/cmp/training/meetings/](http://www.dur.ac.uk/cmp/training/meetings/).

All research students and PDRAs (and sometimes staff) take turns at giving a presentation at these meetings. Possible topics include an outline of the experimental or theoretical techniques and facilities you use, a summary of your research, a review of the best groups in their area, or a journal club paper presentation. A presentation about the sort of thing expected is available at: [http://www.dur.ac.uk/cmp/training/meetings/](http://www.dur.ac.uk/cmp/training/meetings/).
Students and PDRAs can find out which group they have been assigned to at [http://www.dur.ac.uk/cmp/training](http://www.dur.ac.uk/cmp/training) (after they have registered for the lecture courses they will attend). Members are assigned a group by the Director of the Centre and their supervisor/boss. All students and PDRAs who cannot make their Intergroup Meeting are expected to send apologies to the Chair of their group and make up for any missed meetings by attending the next (following week) intergroup meeting -- attendance at one half of the total meetings (pro rata) is mandatory unless by special agreement with the CMP Intergroup meeting staff member. It is strongly recommended that all new members of the Centre—Staff, PDRAs and 1st year students attend Intergroup meetings weekly.

The meetings are managed throughout the year by the Intergroup Meeting Student Chairs - speakers should make sure to let them know and have the web-pages changed with their replacement speaker when they cannot make your slot for giving your talk. Please make sure to sign in at the Intergroup meetings - student chairs will circulate attendance lists at the end of each term. Core staff lose credit for supervising/managing those non-core staff who do not attend meetings.

**Centre for Materials Physics Open Day: Posters, Recruitment and Outreach**

*Tuesday Michaelmas Term week 5 Ph132 (Date on back page)*

**Contact:** CMP Recruitment Open Day Organiser

Once a year, all members for the Centre get together for a buffet lunch around some posters showing the research from all the groups in the Centre and talk about science. It is always fun. As part of our recruitment effort, we also invite the undergraduates to come and look at what we are doing. Usually there are also some outreach activities. PDRAs from all the groups are asked to produce posters. Please contact the CMP Recruitment Open Day Organiser for further information. Attendance at this event is a requirement for all current postgraduates.

**Postgraduate Seminar Day**

*Wednesday Easter Term week 10 Ph 30 (Date on back page)*

**Contact:** CMP Postgraduate Seminar Day Organiser

We also give our students the chance to practise their communication skills by holding an annual mini-symposium where they give a talk on their research. It’s a great opportunity to show off your work and get prepared for upcoming conferences!

All second and third year postgraduate students are required to give talks on their research work to the Centre for Materials Physics staff and students. Second year students are allocated 20 minutes and third year students have 30, including questions. The talks are usually held on the afternoon of Wednesday of week 10 in Easter term. It is the responsibility of third year postgraduates to let the Seminar Organiser know if there are research commitments that restrict their availability. Attendance at the whole event is required for all postgraduate students.

**Centre for Materials Physics Society**

**Contact:** CMP Society Chair

The Centre’s PDRAs, fellows and postgraduate students meet with some staff once a term. The Society has two core functions: to welcome all new members of the Centre so that they feel at home and to encourage interaction between all members of the Centre across the research groups. Typically, Society meetings are used to plan socials and Centre outings but can also discuss matters arising from intergroup meetings and seminars. All the meeting times and dates will be available on the CMP society webpage – everyone in the Centre is invited to attend. Usually the Society organises a welcome party and meeting on the 1st Friday of Michaelmas term, a Christmas meal and a Summer BBQ. There are also informal events, such as monthly pub lunches and others that are advertised on the Society web-pages.
6. Departmental Logistics: Stuff you Should Know

Safety
Contact: Supervisor/Line manager, Physics Health and Safety Coordinator

In October of each year (a few days before the beginning of term), the Department has a safety induction process which all new postgraduate students are required to attend. Ensuring a good standard of health and safety requires that all members of the Department comply with its requirements, duties and statutory obligations. Members are responsible for their own safety – if you are unsure about the safety of anything you are doing, speak in the first instance to your supervisor. Documentation changes slowly – still try to complete it all electronically (scanned and electronically edited if necessary).

Safety documents you should complete in the first few days:

i) You and your supervisor must complete a risk assessment form before you can start any experiments conducted within the Centre for Materials Physics. Forms are available at: www.dur.ac.uk/physics/internal/safety/

ii) You can only be issued with out-of-hours laboratory 'keys' after you have attended the safety induction. If you do not arrive in September, please speak with the Director of Operations who will ask you to complete an on-line safety questionnaire prior to issuing keys. Forms for out-of-hours working are online at https://www.physics.dur.ac.uk/OutOfHoursRequests/CardValidate.php.

Postgraduate research students cannot undertake experimental work outside of normal working hours unless authorised by their Supervisor. Anyone working in the Department before 7.00 am and after 7.00 pm Monday-Friday, or any time Saturdays or Sundays must sign the book kept at either the entrance to the Rochester building or Ogden Centre (required by fire-regulations).

You are required to fill out control of substances hazardous to health (COSHH) assessment forms for all hazardous substances you use. Orders will not be processed by the Department if they do not have your COSHH form. Both Risk and COSHH assessment forms should be discussed with your supervisor, who must countersign them. Hard copies of completed forms should be electronically forwarded to the Department Health and Safety Co-ordinator at www.durham.ac.uk/physics/internal/safety/

Students must also read the Departmental safety policies and pages relevant to their work in the Department's Safety Manual (available at www.durham.ac.uk/resources/physics/internal/safety/PhysicsHealthandsafetymanual2010.pdf).

For further information regarding health and safety, see www.durham.ac.uk/physics/internal/safety/

Supervisors and Supervisory Meetings
Contact: Academic Supervisory Team

Durham University is a world-class research-led University. It is very important for new postgraduate students and PDRAs to develop a healthy relationship with their lead supervisor and second supervisor (i.e. supervisory team). These are just some of the tasks that our world-class core academic staff take the lead with as part of making their research group successful:

i) Reading, writing and refereeing research papers.
ii) Education and teaching at both undergraduate and post-graduate level
iii) Writing and refereeing proposals as part of securing resources for research.
iv) Supervising members of their research team and mentoring more junior academic staff.
v) Building collaborations within the University and throughout the world – this often requires giving talks at and arranging National and International conferences and committee meetings and includes outputs such as setting the international education and research agenda.

For further details visit: www.dur.ac.uk/cmp
vi) Research and education administration—including contributions to Departmental duties and support for the Centre for Materials Physics.

vii) Helping the University meet its KPIs
    (Key Performance Indicators: http://www.dur.ac.uk/about/strategy2020/)

viii) Innovations in research, teaching, out-reach and administration.

In the C21st, many academics have to spend much of their time managing science rather than doing it themselves. In the midst of this activity, your academic supervisor will prioritise helping you to progress in the right direction and helping you to discover your research style. Of course you should use their time as sparingly and as efficiently as you can (using other sources within the Centre when possible). You will know that working with successful senior people effectively will be a critical skill throughout your career. In the Centre, staff have developed many different approaches to research supervision that varies from frequent formal supervisory meetings to informal ‘neural-network’ type supervision by teams of senior post-docs and staff. The relationship you have with your supervisor is very important indeed—such relationships change significantly from one supervisory team to another depending on the specific research activities and the personalities involved. Good supervision is a key component of successful research. All students in the Centre are assigned two academic supervisors as their supervisory team. Students help build these teams. In the Centre we don’t want to limit the diversity of approaches to supervision, but if a student wishes, they can ask for regular more formal supervisory meetings occurring approximately every 4 weeks between both supervisors and the student (as well as regular informal meetings) to review progress and set targets/milestones. The Centre helps support this supervision by giving credit to academic staff who provide this additional support.

Naturally the best students know that although good supervisory meetings are a critical component of good research, they themselves drive the research at the coal-face and it’s up to them to get it done! They follow Newton’s philosophy and stand on the shoulders/copy the best of the postgraduates/postdocs around them.

**ASRs and Pastoral Interviews**

The Centre is committed to providing a supportive environment for all its members. Every year all staff and PDRAs have an Annual Staff Review (ASR). Post-graduate students have an annual pastoral interview with a member of staff who is outside of their supervisory team.

**Holidays and Sick Leave**

**Contact: Supervisor/Line manager**

Research students may with the prior agreement of their supervisor(s) take up to eight weeks holiday in each year, inclusive of normal public holidays. As a rule of thumb, it is recommended that postgraduate students notify their supervisors of any holidays a period in advance equal to the duration of the holiday itself (of course this advance period is entirely negotiable for unforeseen personal/family circumstances). You are best advised to try to take a break over the public holidays when the laboratory is formally closed (Christmas and Easter) The dates of the public holidays are available on the Web/University diary [www.durham.ac.uk/hr/policies/leave](http://www.durham.ac.uk/hr/policies/leave).

Many of us have responsibilities for others (e.g. children, parents) or may become ill. In managing these responsibilities one should consider which people are in the ‘need to know’ category. You will find people in the Centre are very supportive indeed when they realise that you are implementing changes at short notice because it is unavoidable. Some of the things that you may consider are: have a chat with your supervisor to let them know what is going on; make sure safety is not compromised; ensure that you delegate those things that affect the work of the people around you – for example demonstrating/teaching duties. Remember that you are always welcome to drop in to see your supervisor to discuss how best to manage things, so that when things are a little easier (and they will be), you can pick up the reigns again with gusto.
Procurement of Equipment and Consumables

Contact: Supervisor/Line manager

If you wish to acquire new equipment or consumables you should talk with your supervisor and get their approval. To place an order fill out the requisition form available online at www.durham.ac.uk/cmp/training/resources and forward it to your supervisor, who in turn will send it to the Departmental Finance Office.

The University has established contracts with a range of suppliers from whom equipment and consumables should be ordered if possible. A full list of these select companies is available of the University’s procurement website; www.durham.ac.uk/procurement/local/buyers_guide. This site also contains details of the number of quotes that must be sought when purchasing expensive equipment.

Posters and Talks

Contact: Supervisor/Line manager

You will also be expected to design posters and/or produce talks for the conferences you attend. Talks and Posters are routinely produced using PowerPoint. The Centre for Materials Physics has produced some poster templates and talk templates, which members are requested to use as starting points. These can be accessed at www.durham.ac.uk/cmp/training/resources.

The Physics Audio Visual service is efficient at printing posters up to size A0. The University’s central Information Technology Service (ITS) can also print A0 posters. For information on printing through ITS (and general poster design advice) see www.durham.ac.uk/resources/its/info/guides/141A0printing.pdf

CMP Ambassadors

Contact: CMP Staff Member for Overseas Recruitment

A number of Postgraduate students have kindly agreed to act as ambassadors for CMP. Typical ambassador talks are available on the web. We encourage students and PDRAs (and cover local expenses for them) to give talks (typically 80 % of the talk should be their own groups published work) at their old school or University.

Promoting your Published Work

One of the important metrics for a successful Ph.D is the work you publish in journals - preferably with a high impact factor for your field: http://www.dur.ac.uk/cmp/training/resources/. Writing scientific papers is a complex business. We take Schrodinger’s comment seriously in the Centre “If you cannot - in the long run - tell everyone what you have been doing, your doing has been worthless” – Erwin Schrödinger 1887-1961 (Nobel Prize winner in physics 1933). The Institute of Physics have produced an ‘Introductory Guide for Authors’ available here. The IoP guide talks about strategies for promoting your published work. Promotional activities don’t sit very easily with British culture, but in a period when CMP spends millions every year on research it is important that our work has an appropriate international profile. You can be reassured that eventually the quality of the work usually determines its profile. However promotion of published work in the first year or two is particularly important for early career and student researchers – indeed the best applicants for permanent posts in the Physics Department more often than not include publication metrics for their papers including the number of journal citations each paper has secured.

Students and post-docs should talk with their supervisors/ line-managers about how best to promote their work – resource has been set aside so that if you wish, you can send a list of contact names and addresses of colleagues you know/cited in your paper/would benefit from reading the paper, to Physics AV and they will (have them printed by Alphagraphics and) send by post a colour hard-copy of your paper with a compliments sheet for you to sign – simply ‘With best regards, name’ from the first author is sufficient although a few personalised words will have more impact.
Improving your Web presence

The University default web-page is rather basic for staff, PDRAs and postgraduates. You can improve your outward facing University web-pages very simply by sending the Physics Audio Visual Supervisor materials and asking him/her to update your web-page. There are a number of standard sections you can populate: Research Interests - Send some paragraphs summarising research interests which can include some images; Selected publications - Send a list of your selected 10-15 best publications. AV can arrange a (legal) link to the actual papers and include a link to a page showing all your publications. Let AV know if you would like them to update your comprehensive CMS list of publications through Web of Science; Optional materials - a personal website link, a list of Indicators of Esteem. Some good web pages for Staff/PDRAs/Postgraduates -


Odds and Ends

The core working hours are typically 9.00 am to 5.30 pm. Office open hours are 7.30 am to 7.00 pm. There is coffee served at ~11.00 am and tea served at ~4.00 pm in the Bransden Room (Ph 221). Access out of hours requires a member of core staff to sign a form that is part of the induction pack.

Find out where the pigeon-holes for your mail are. Check them regularly in the period after you first arrive when you can expect to receive a large amount of internal mail. All stationery is available or can be ordered from the Departmental Secretary and is not countersigned (free).

Keep two (sets of) lab books and put your e-mail address on the front of both of them. One should be a chronological record of all your scientific work be it experimental or theoretical/computational. The second lab book should be for notes at intergroup meetings, seminars and conferences. Copy the approach of the academic staff – they arrive for a intergroup meeting/internal seminar with the same materials for making notes that they take when attending an invited lecture at an international conference.

We often show visitors around the Centre for Materials Physics. Experimentalists should make sure laboratory space is kept in a reasonable state – make it obvious that you take care with expensive equipment and/or hard-earned samples. The best experimentalists have a research area that looks organised/professional. Your desk is your own affair – you wouldn’t be here if you weren’t organised.

Try to do as much electronically as you can. There are still some dinosaurs roaming the University – they are friendly, don’t bite and will offer you free forms to sign or ask you to ask your mentor/supervisor to sign. Don’t join them! For example: if you need to send forms (even .pdfs) for signature, send them (in editable form) electronically; order materials/consumables electronically, fill out safety forms electronically – subsequent repeat orders and renewal of forms become easier.

In addition to using the University firewall, please make sure to install free AVG anti-virus software to protect your personal computer. It is available from http://www.avg.com/. If you are using a Linux machine with a Windows virtual machine, make sure to install AVG on the virtual machine as well.

Please look at our PowerPoint presentation on creating memorable secure passwords on the web at: http://www.dur.ac.uk/cmp/training/resources/ Many users assume nobody would want to break into their account, but it is more than problematic if it happens!
7. First Year Progression for Postgraduates

All new students should read the section below on Postgraduate Lectures and after a discussion with your supervisor/boss fill out a “lectures modules sign-up form” available at www.dur.ac.uk/cmp/training/resources – send it to the Postgraduate Lecture Course Organiser and the Director of CMP.

Although research performance is the most important aspect of Ph.D. study, students’ performance at the Materials Physics Postgraduate course and attendance at Seminars and Intergroup meetings are also used by supervisors and the Centre to help to decide which students should continue into the second year of their studies. Competition for admission to the Centre is tough, so it is quite rare for progression not to occur.

Progression by postgraduates in CMP to the 2nd year, requires at least a pass mark in each of five components - three ‘Taught course modules’ (60 credits), the ‘Research development training module’ (15 credits) and the ‘Research project component’ (75 credits).

Taught course modules: these are continuously evolving and can be taken from across the science faculty. Six typical modules are shown below:

i) Materials Physics: principles, methods and analysis I
   Quantum Fields in Condensed Matter Physics
   Computation and Electronic Structure Theory
   Symmetry and Point Group Theory

ii) Materials Physics: principles, methods and analysis II
   Data analysis techniques
   Electron Microscopy
   Electric fields in media

iii) Quantum Theory I

iv) Quantum Theory II

v) Materials physics: topical overviews
   Molecular Electronics
   Spintronics
   Soft Matter and Biophysics

vi) Materials physics: topical overviews
   Magnetic materials and Superconductors
   Defects in solids
   Semiconductors and Device applications

The research development module consists of: attendance at typically 18 CMP Intergroup meetings with relevant personal talks; attendance at > 75 % of the CMP seminars (pro rata); attendance at research specific and generic courses both in the Physics Department and organised centrally by the University.

There is training provided both by the University and the Centre. The scope and nature of the training required are specific to the research project and are decided in discussion with your supervisory team.

First Year Viva

The viva can consider any aspect of your research work, meetings and training. The examiners will ask you about your 1st year report and your training. You are encouraged to bring a copy of your 1st year report, your lab books (Cf. Section on ‘Odds and Ends’) with notes from groups meetings, Intergroup meetings and Seminars. It is the student’s responsibility to ensure they sign in at the compulsory Intergroup meetings/seminars they attend.
8. The Postgraduate Lecture Course in the Centre for Materials Physics

Contact: CMP Postgraduate Lecture Course Organiser

Lecture Courses

Students from all years are welcome and encouraged to attend courses throughout the University in consultation with their supervisor. They are also encouraged to attend any relevant Level 4 M.Sci. courses including those in Chemistry, Engineering, Biology and Mathematics. Students from other departments or universities are welcome to attend CMP lecture courses – please fill out the ‘Sign-up Form for Postgraduate Lectures’ available at: [www.durham.ac.uk/cmp/training/resources](http://www.durham.ac.uk/cmp/training/resources) and send it to the CMP postgraduate lecture course organiser.

After progression to the 2nd year, all courses are entirely voluntary. In these later years, you are still asked to fill in a Sign-up form for postgraduate lectures in the Centre so we can assess the total up-take for courses in Physics and across the Faculty/University. Your supervisor will be able to advise you on the most appropriate choices. Many students in later years choose to take courses from institutes and departments throughout the University.

Physics Postgraduate Lecturers are required to prioritise the schedule for giving lecture courses to Undergraduate Physicists (approximately 300 students per year). This may mean that postgraduate lectures are rearranged (by agreement with the Postgraduate Lecture Course Organiser), so please check the Centre for Materials Physics web-pages ([http://www.dur.ac.uk/cmp/training](http://www.dur.ac.uk/cmp/training)) for lecture times. One possible alteration is that ten one-hour lectures may become five two-hour lectures.

Lectures will usually be held at 9.00 am and 10.00 am Monday-Friday in the Physics Sir James Knot Library (Ph132), starting on Monday of week 2 in Michaelmas term. A typical lecture timetable is included within this handbook. Students are required to provide on-line feedback for all courses they attend.

**Electrical and Magnetic techniques**

This course will introduce the student to techniques commonly used to measure the magnetic and electrical properties of materials. Specific topics covered in the course will include a basic introduction to the classes of magnetic and electronic materials and their properties; definitions of measurable quantities and units; magnet design; magnetometers; measuring magnetization, susceptibility, magnetocrystalline anisotropy and magnetostriction; imaging magnetism; electrical contacts and contact configurations; dc and ac measurements; resistivity, Hall effect and magnetoresistance; experimental artefacts in magnetic and electrical data.

**X-ray and Neutron Diffraction**

The course covers both the theoretical and experimental requirements for x-ray and neutron scattering. In particular the production of x-rays and neutrons as well as the fundamentals of crystallography and diffraction are discussed. Kinematical scattering theory is developed from Fermi’s Golden rule and how this theory is related to experiment is discussed. Examples using double and triple axis single crystal diffraction and powder diffraction are used to illustrate the structural and magnetic information that can be obtained.

**Experimental Techniques in Physics + Cryogenics**

Electron Microscopy and Analysis
Electron microscopy is one of the most important and versatile characterisation tools available to the materials scientist. It is widely used for probing the structure and chemistry of matter from micrometer length scales down to single atoms. In this course the fundamentals of electron microscopy is covered, such as secondary, backscattered electron imaging and chemical analysis in the SEM as well as crystal defect analysis, phase contrast imaging and electron diffraction in the TEM. Emphasis is placed on the principles of each technique and correct interpretation of data taking into consideration any underlying physical and instrumental limitations. Strategies to get the most out of each technique will also be highlighted.

Defects in crystalline solids
Charles Frank compared crystals to people- it is the defects that make them interesting (or not)! Crystal defects occur in various shapes and sizes, including geometric points, lines, surfaces and volumes and govern many macroscopic physical properties of real materials/devices. For example in nanotechnology the free surface of objects with high surface to volume ratio is an important defect that needs to be taken into consideration, while in multi-layer thin-films the interface between dissimilar materials forms another class of defect. In this course several fundamental defect types, such as dislocations, stacking faults and grain boundaries, will be introduced. We will also look at how they affect physical (e.g. mechanical, optoelectronic etc) properties and the experimental tools available to characterise them. The course assumes a basic knowledge of crystallography (largely confined to Miller indices of crystal planes and directions).

Quantum fields for condensed matter physics
This course is intended to be an unfrightening guide to some of the quantum mechanics used in modern Condensed Matter Physics. This material may be used not only to describe states of matter such as metals, magnets and superconductors, but also phase transitions, quantum Hall fluids, solitons and soft matter problems. The emphasis of the course will be on understanding concepts and we’ll avoid many of the detailed calculations needed by those wanting to work in this area professionally. The following topics will be covered in varying levels of detail:

* Second quantization and the coupled oscillator problem
* Occupation number representation
* Time evolution and the need for quantum fields
* Lagrangians and canonical quantization
* Examples of second quantization in many body physics
* Aspects of the many body problem
* Perturbation theory
* Path integral methods
* The renormalization group

Nanoscale Structuring: Lithographic Patterning and Structure Preparation
The structuring of materials with some or all dimensions down at the nanoscale is now a common feature of many systems studied in physics, chemistry, engineering and biological research work and is present in much modern technology. There are two broad approaches to producing nanoscale structures; namely the top down approach, where structures are patterned from larger scale structures using lithographic processes, and bottom-up methods that include chemical synthesis and self-assembly. This course will introduce both of these areas and focus on the more generically applicable top-down methods. Two practical sessions give hands-on introductions to ion-beam and electron beam lithography.
A typical timetable for the Centre for Materials Physics lecture courses is displayed below. All lectures commence in week 2. Lectures then continue on a weekly basis for the number of weeks indicated. A current schedule can be found on the Centre’s website at www.durham.ac.uk/cmp/lectures.

### Quantum Theory I

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<td>Quantum Theory I</td>
<td>Experimental Techniques</td>
<td>Electrical and Magnetic Techniques</td>
<td>Atom and Light Interactions</td>
<td>Spintronics</td>
<td>The Physics of Surfaces</td>
<td>Electron Microscopy</td>
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**Visiting lecturer:** 8 lectures: **XRD and Neutron diffraction** 12 noon Sir James Knott.

### Quantum Theory II

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**Open lectures**

Fusion Energy Technologies – Part of the Durham Energy Institute lectures.
Biophysics
Objectives of this course are to become familiar with common biomolecules and to understand the forces/potentials that are important in producing and maintaining their structures and interactions. To be aware of a range of techniques commonly used to characterize biomolecules and to have an understanding of their uses and limitations. Content are the following: the major players: what are the common biomolecules found in nature (protein, DNA/RNA, phospholipids, carbohydrates) and what their roles are, proteins: primary structure, forces that drive folding (hydrophobic, electrostatic, hydrogen bonding, Van der Waals), information content and energy landscapes. Hierarchy of structure and common motifs (beta/alpha). DNA/RNA: Structure (primary and folding). Base pairing. Annealing and PCR. Phospholipids: structure of membranes, connection between chemistry and curvatures. Forces in membrane fusion and the roles of proteins. Techniques: 1. Is it pure and whole? (chromatography, gel electrophoresis) 2. Is it folded? (CD, FTIR) 3. Is it dispersed in solution/assembled? (Scattering, DLS, AUC) 4. Can I see it? Protein design: how sequence controls structure. How to obtain information from the pdb – redundancy the difference between specificity and stability. Self-assembly: Driving forces; monomer-dimer equilibria; kinetics: nucleation and growth versus spontaneous assembly. Conformational switching: role of switching (recognition, signalling, doing work) molecular motors in nature synthetic motors

Soft Condensed Matter Physics
Thermodynamically induced fluid-fluid de-mixing studied using the Cahn-Hilliard equation, without hydrodynamics. Flow induced instabilities, including shear banding, analogy with equilibrium phase, co-existence in the Cahn-Hilliard systems, calculation of shear banded states within the context of a simple scalar model.

Time Resolved Optical Spectroscopy in Materials Research
Introduction to time resolved optical spectroscopy techniques. Methods of measurement in the femto, pico, nano and micro second will be discussed along with various types of measurement such as fluorescence and pump probe. Examples will be given relating to organic semiconductor research to show how time resolved spectroscopy has been used in the development of OLEDs and organic photovoltaic devices. Practical sessions will be included to give the student first hand experience of making time resolved measurements.

Electronic Structure Theory and Density Functional Theory
Objectives of this course are to become familiar with, and develop an understanding of, the ubiquity and power of first principles electronic structure theory techniques as applied to condensed matter and materials physics. To equip students such that they can understand the strengths and weaknesses of density functional theory (DFT) and its regime of applicability. To be able to critically evaluate the validity of calculations in the literature. To be aware of the most commonly used approximations. To be aware of methods (e.g. Quantum Monte Carlo/GW Approximation) beyond DFT. Contents: Importance of electronic structure theory; the many-electron Schroedinger equation; impossibility of direct solution; the independent electron approximation: Hartree Approximation; the exchange interaction: Hartree-Fock Theory; failures of Hartree-Fock in the solid state; towards a density functional theory: Thomas-Fermi Approximation; Hohenberg-Kohn-Sham density functional theory; meaning of the Kohn-Sham eigenvalues - the ‘Band Gap problem’; approximations for exchange and correlation: LDA, GGA, orbital dependent functionals; solving the Kohn-Sham equations: plane waves and pseudo potentials; strengths and weaknesses of DFT; alternatives to DFT: QMC, GW. This course is aimed at the non-specialist.

Symmetry and Point Group Theory: Applications in Physics and Chemistry
This course will introduce symmetry as a unifying concept and its mathematical treatment, group theory. The course will emphasise practical applications of group theory in physics and chemistry by considering the symmetry of isolated molecules. We will cover selection rules in infrared and Raman spectroscopy as well as electronic bonding, electronic transitions and band theory.
The course will be run as workshop sessions involving taught material, problem sheets, self-paced programmes and continuous assessment.

| Workshops 1-2 | Symmetry Elements, Operations and Point Groups |
| Workshops 3-4 | Non-degenerate representations, Matrices and Degenerate Representations |
| Workshops 5-6 | Linear Combinations and Applications to Vibrational Spectroscopy |
| Workshops 7-8 | Symmetry and Bonding, Electronic Spectroscopy and Band Theory |

**Fusion Energy**

Prerequisites: A good undergraduate degree in Science.

Course contents: Pragmatic low-carbon solutions to the UK energy challenges will inevitably include nuclear energy. With many of the country’s current nuclear power stations coming to the end of their working lives and Britain having set a 2050 target of reducing carbon emissions by 80% from 2000 levels, it is clear in the medium term that nuclear technologies will be required — a fact recognised by the Government in its recent announcement to build 10 nuclear standard (fission) power stations in the UK at a cost of ~£50b. There are concerns about fission nuclear power stations — associated with toxic legacy; security of fuel supply and proliferation of weapons technology. Fusion energy provides an demanding alternative nuclear technology that requires holding a plasma burning at 100 million degrees. However the fuel is derived from seawater (i.e. essentially limitless), the levels of toxic materials are very much less than produced using fission, and fusion technology is not a weapons technology. These lectures will address some of the key issues in fusion energy technology.

(Note: these lectures are available to all members of CMP but are not part of the assessment for progression to 2nd year.)

9. Training and Development Opportunities

The Durham Doctoral Training Programme provides free general training which is relevant for all postgraduates across Durham University. In the first month of your course, under the guidance of your supervisor(s), you will complete a training needs analysis, to determine how the Durham Doctoral Training Programme can best serve you. Listed below is just a selection of some of the rather basic training programmes that could be useful to you in your PhD. Dates, times and how to book, along with the full range of opportunities available are given in the Doctoral Training Handbook, available online at www.durham.ac.uk/graduate.school/doctoral.training/

**Supporting Your Research**

**Getting Published in Science**

Target audience: Postgraduates in science disciplines who are about to publish a scientific paper.

Postgraduate students very rapidly realise that 1st author publications in archival journals is usually the key metric for securing a high trajectory research career (in a number of Universities or Industry). However, getting your first few papers published is often difficult for early stage researchers. This workshop will explain the publication process and consider strategies for getting your paper published.

Learning Outcomes:

- To understand the scientific publishing process
- To have considered if they have material that is suitable for publication
- To have selected a suitable form of publication
- To have considered a target journal/conference for their work
- To provide a supportive and pro-active attitude to academic publishing

This workshop will be run in conjunction with the on-line module “Getting published in the Sciences” (see below)
which is available through the postgraduate training and development module in Duo (Durham University Online, an online resource for staff and students based on the Blackboard software). All participants will be expected to have worked through this module (which should take about 2 hours) before the workshop.

How to Make the Most of Conferences
Conferences provide an ideal opportunity to keep abreast of developments in your field, share your research with the wider academic community, catch up with old friends and make new ones. The aim of this session is to introduce participants to strategies that can be employed to make the most of conferences.

By the end of the session, we will have explored:
• Ways in which you can prepare for conferences and how to make the most of networking opportunities
• The importance of ‘following up’ after the event
Please note, this session does not cover presentation techniques.

How to Make the Headlines – Introduction to Media Relations
Target audience: All research postgraduates from any discipline. You need not have any media experience to take part.

Academics are increasingly being encouraged by Government, funding bodies, and others to disseminate their research findings beyond their professional circles. Mass media coverage for your work can help you reach a broad and diverse audience, and it can also bring many career benefits, including offers of research collaboration and funding, political influence, and a higher regional, national and international profile for you, your department and your University.

Key Objectives:
To encourage successful working with your media relations office and journalists now and throughout your academic career. By the end of the course, participants will have:
• Gained new skills to identify potential news stories in your research and to work with your media relations office to develop appealing media packages
• An improved awareness of how to communicate
• The right messages about you and your work to journalists and the public

A Career in Academia: Making Successful Applications
Target audience: All PhD researchers, especially those nearing the end of their research.
This session will focus on how you can effectively market yourself to academic employers via CVs and application forms, through covering letters and at interview.

Intellectual Property – Why didn’t I think of that?
Target audience: Final-year research postgraduates from any discipline with good publications.
University research, by its very nature, produces an endless stream of intellectual property. This talk will cover the basics of what is intellectual property, who owns it, how to protect it and how to exploit it. A member of Durham University Technology Transfer Team will also be available to explain the University position with regard to intellectual property.
Women Can, Women Do!

Target Audience: Female Postgraduates
A fun, practical event for women with enterprising ideas they want to make happen. Would you like to explore whether there is money to be made from ideas you may have? Would you like to find out more about how to build your future from the things you enjoy? If so, this event is designed for you! This practical event will give you the opportunity to meet local women who have put their ideas into action. Hear what it is really like to start your own enterprise and be inspired to make the very most of your own ideas in a lively, supportive atmosphere.

Information Literacy and IT Skills

Introduction to PowerPoint presentations
This course is designed to give participants some practical experience of designing a presentation using PowerPoint together with some ideas about the range of opportunities which the application offers.

Advanced Excel and Endnote

These courses covers the creation of more complex formulae using Excel's in-built suite of functions, with a focus on decision-making and provide the knowledge to use EndNote for bibliography management, via a step by step introduction to the fundamentals. They enable users to utilise EndNote as a Reference Database: to store manage and search for bibliographic references in a user's private reference library. Target Audience: those already familiar with using Excel and Endnote who wish to use some of the more advanced features of the software.

Long Documents in Word

This course demonstrates the tools in Word for handling longer documents, such as a PhD thesis. The topics include: outlining, navigating longer documents, captions, table of contents, indexing and sub- and master documents in Word.

By the end of the course, participants will know how to use Word functions to:
• Navigate a long document
• Insert figure and table captions
• Construct tables of contents
• Use the sub and master document features to create a consistent document.

Developmental Opportunities

Undergraduate teaching
Postgraduate students are usually encouraged to do a small amount of undergraduate teaching work during their time in the Department. This could comprise of running tutorial sessions, demonstrating in the labs, marking homework, helping students to understand and solve problems in their problems sessions or other similar work. As academic staff are generally expected to engage in undergraduate teaching, this is a good way to enhance your CV. Postgraduates can expect to earn about £1000 a year in this way. This money is in addition to any studentship or other awards.

Durham University Science Outreach
The Durham University Science Outreach team provides inspirational, fun, hands-on science activities for schools and colleges throughout the North East of England. They aim to stimulate an interest in science and an understanding of how science is used in the modern world.
If you are interested in joining them, whether it’s for a one-off drop in session in a school science club or a year long placement, they can use your skills. Full training is given and all expenses are paid. You’ll find more information about what they do on their website. If you have any queries or would like to get involved please contact: www.durham.ac.uk/science.outreach.

10. Research Groups in the Centre for Materials Physics

One of the strengths of the Centre for Materials Physics in Durham is the diversity of expertise and research interests it encompasses. Under the umbrella of the Centre for Materials Physics are many groups – these groups are recognised internationally for their excellence, but also include new exciting research activities that have recently ‘nucleated’ following a break-through or significant development in the Physics community. We have major research groups encompassing Inorganic Electroactive Materials; Condensed Matter Theory; Nanoscale Science and Technology; Organic Electroactive Materials; Photonics, Sensors and Materials; Soft Matter and Biological Physics; Muon Physics; Superconductivity and X-ray Scattering and Magnetism.

The Centre for Materials Physics is based in the Physics Department, has physics as its core discipline and training, but is interdisciplinary. When Rutherford collected his Nobel Prize for chemistry, he must have rued the day he said ‘All science is either physics or stamp collecting’. Our centre brings together researchers with backgrounds in physics, engineering, maths, biology and chemistry to work alongside each other and fosters strong links to other centres and institutes throughout the University including the Durham Biophysical Sciences Institute and the Durham Energy Institute.

Condensed Matter Theory (www.durham.ac.uk/cmp/research/groups/cmt)

Our research is concerned with the theory of the properties of condensed matter and structures it forms, including studies relating to semiconductors, superconductors, and other functional inorganic materials, photonic microstructures and the light-matter interaction, organic and soft matter, and biological physics. In such studies the interest can be in describing a fundamental physical process or in understanding device operation through simulation, in calculating materials properties using theoretical models or first principles computation using supercomputers. The group has a number of fruitful collaborations within Durham as well as with researchers in other universities and in industry.

Soft Matter and Biological Physics (www.durham.ac.uk/cmp/research/groups/softmatter.bio)

The soft matter and biological physics group have research interests that span both theoretical and experimental aspects of soft condensed matter and biological physics. Specific research interests include the study of non-equilibrium phenomena in complex fluids, hydrodynamic instabilities in biologically active suspensions, molecular rheology, polymer relaxation mechanisms, organic semiconductors, probing the structure and dynamics of liquid crystal layer formation, the design of self-assembling systems and the physics of nanoscale motion. Simulation methodologies and computational techniques used by members of the group can lead to greater understanding of the physics of light emitting polymers and bio inspired photovoltaic solar cell structures which are studied in the Centre.

Organic Electroactive Materials (www.durham.ac.uk/cmp/research/groups/oem)

The group’s work is based around the study of electroluminescent organic molecules. These systems are characterised by strong light-to-charge and charge-to-light properties, and as such have many promising applications at the heart of the next generation of lighting and photovoltaic devices. The aim of the group is to study the wide range of fascinating physical properties associated with organic electroluminescence, starting from the fundamental photophysical properties of small molecules and conjugated polymers, and working all the way up to device design and manufacture. In this way we control all aspects of our work from start to end and get the best from our materials. An overriding tenet of our work is to do the best we can with the best equipment and the best experimental design in order to fully elucidate the problem at hand.
Photonics, Sensors and Materials ([www.durham.ac.uk/cmp/research/groups/psm](http://www.durham.ac.uk/cmp/research/groups/psm))

In the Photonics Sensors and Materials group, researchers with backgrounds in physics, chemistry and engineering work alongside each other in areas as diverse as molecular chemistry, non-linear optics, liquid crystal displays, telecommunication photonics devices and electrical and optical sensors. The group is often allied with industrial sponsors and has been responsible for patents filed with major companies such as Corning, Nortel Networks and Sony, as well as with the start-up companies Peratech and Farfield Sensors.

Inorganic Electroactive Materials ([http://www.dur.ac.uk/cmp/research/groups/iem](http://www.dur.ac.uk/cmp/research/groups/iem))

The group is currently engaged in examining various aspects of the growth and characterisation of semiconductor materials and devices, with an emphasis on thin-film structures for photovoltaic applications. We are active in thin-film inorganic semiconductor solar cells (particularly those based on sustainable materials, such as Cu$_2$ZnSnS$_4$), nanoparticle-polymer hybrid solar cells as well as plasmonic solar cells. A range of state-of-the-art techniques in photoluminescence and electron microscopy are used to characterise materials microstructure and properties, which are then compared to the overall device performance.

Areas of research include electrical activity of defects (particularly grain boundaries) in semiconductor thin-films and role of morphology on charge transport in organic PV.

Muon Physics ([www.durham.ac.uk/cmp/research/groups/muon](http://www.durham.ac.uk/cmp/research/groups/muon))

Muons are subatomic particles that act as microscopic probes of magnetism. Using particle accelerators we produce muons that we implant into solids, allowing the investigation of new forms of magnetism and superconductivity on the nanoscale. Current areas of research using muons include: molecular magnets, where we use molecules to build magnets that are two-, one- or even zero-dimensional; superconductors, where we use muons to explore the vortex lattice; and frustrated magnets, where it is not possible to satisfy all of the competing magnetic interactions to find the material's ground state, resulting in exotic, quantum mechanical behaviour.

Nanoscale Science and Technologies ([www.durham.ac.uk/cmp/research/groups/nanoscale.physics](http://www.durham.ac.uk/cmp/research/groups/nanoscale.physics))

The research in this group spans both ‘bottom up’ and ‘top down’ approaches to the fabrication, study and application of materials, structures and devices with critical length scales measured in terms of nanometres. Current research projects include studies of the fundamental properties of electrons confined in nanostructures, particularly carbon nanotubes; time-resolved and thermally activated processes in nanomagnetism; the development of nanoscale sensors and probes; and controlled modification of the physics of nanostructures at the atomic scale.

Superconductivity ([www.durham.ac.uk/cmp/research/groups/superconductivity](http://www.durham.ac.uk/cmp/research/groups/superconductivity))

Superconductivity is one of the most interesting, important and dynamic areas in science – it ranges from beautiful fundamental science to essential materials for applications from medical body scanners to the large hadron collider (LHC) and fusion energy tokamaks. The group in Durham has research activities in fabrication, measurement, theoretical calculations and computational work. The group has world-class high magnetic field facilities. Recent research highlights include: the discovery of a new class of nanocrystalline materials with exceptionally good tolerance to magnetic fields; the design, in-house fabrication, development and operation of variable strain instruments for measuring the strain and temperature dependence of the critical current in high magnetic fields; development of a new theoretical strain scaling law which successfully combines phenomenological and microscopic theory; the first visualisation of flux-flow in polycrystalline materials in high magnetic fields.

We have strong collaborations with colleagues on the continent, and with groups in the USA and Japan working on high-field superconductors and house the European reference laboratory for superconducting materials.
X-ray Scattering and Magnetism (www.durham.ac.uk/cmp/research/groups/xray.magnetism)

The group is primarily interested in the relationships between structural and magnetic and electrical properties of solids. To understand these we use high-resolution x-ray scattering to study the structure and a range of magnetometers to measure the macroscopic magnetic and magnetotransport behaviour. Group members have pioneered the use of high-resolution x-ray scattering and resonant x-ray scattering using synchrotron radiation sources to study magnetism in crystals and thin-films. We developed the new technique of resonant x-ray scattering for the direct observation of charge, spin and orbital ordering in strongly correlated electron systems and spintronic devices. A variety of experimental and computational techniques is used within the group, ranging from dual polarisation interferometry and electro-optic studies through to neutron and X-ray scattering, rheology, and ion beam analysis.
Academic Staff by Group

**Condensed Matter Theory**
Prof Richard Abram  
Prof Stewart Clark  
Dr Stuart Brand  
Dr Suzanne Fielding  
Prof Tom McLeish  

**Soft Matter and Biological Physics**
Dr Elizabeth Bromley  
Dr Suzanne Fielding  
Prof John Girkin  
Prof Tom McLeish  

**Organic Electroactive Materials**
Prof Andy Monkman  
Dr Marek Szablewski  

**Photons, Sensors and Materials**
Dr Graham Cross  
Dr Marek Szablewski  

**Inorganic Electroactive Materials**
Dr Douglas Halliday  
Dr Budhika Mendis  
Dr Aidan Hindmarch  

**Muon Physics**
Dr Tom Lancaster  
Dr Ian Terry  
Prof. K. Prassides  

**Nanoscale Science and Technology**
Dr Del Atkinson  
Dr Michael Hunt  
Prof Damian Hampshire  
Dr Aidan Hindmarch  
Dr Marek Szablewski  
Prof Peter Hatton  

**Superconductivity**
Prof Damian Hampshire  
Prof Stewart Clark  
Dr Douglas Halliday  
Dr Michael Hunt  

**X-Ray Scattering and Magnetism**
Prof Peter Hatton  
Dr Aidan Hindmarch  
Prof Brian Tanner  
Dr Ian Terry  
Dr Marek Szablewski  
Dr Del Atkinson  

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del.atkinson@durham.ac.uk  

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Centre for Materials Physics
11. Technical Services

The Department of Physics provides a range of specialist technical services, which PhD students are encouraged to use to support their studies and research.

Technical Support Booking System

Any technical support request that will take longer than two hours to complete should be processed through the Physics Department’s Online Technical Support Booking System (accessible on the departmental homepage www.durham.ac.uk/physics). This allows the technical services to organise their work efficiently and the Centre for Materials Physics to accurately record its expenditure on technical support. It also ensures that requests from postgraduate students don’t ‘slip through the net’ or are unnecessarily delayed. Once you have logged onto the Departmental database, ‘Technical Support Bookings’ can be found under the “Departmental” section. After you have entered the details of your request, your supervisor will be notified and their approval requested. If your supervisor consents, the work will go ahead.

Users are able to request that a particular member of technical support staff does the task concerned – you may want to make such a request because he or she has already done something similar before. However, the manager of the facility will ultimately decide who is the best person to perform the task.

The form contains an optional fill-in box which asks for the cost of outsourcing a given job. It is not expected that you will necessarily know this, but please think about it. The technical staff are highly skilled – if a job involves the repetitive production of widgets, does it really make sense for the technical staff to do it when they have complex jobs to complete and it can easily be out-sourced?

If a request will take less than two hours, simply speak directly to the relevant technical service.

Please note the technical support booking system does not apply to the electron microscope facility; please contact your supervisor if you wish to use this facility.

Mechanical Workshop

www.durham.ac.uk/cmp/members/services/

The Mechanical Workshop designs and constructs equipment for, research and support areas within the Physics Department, using CAD drawing packages and CNC machines. The Mechanical Workshop has eight technicians and is located in room 37 on the ground floor of the Physics Department.

Design and Construction

- The workshop designs any required mechanical equipment with the use of the latest computer software packages in Computer Aided Design.
- Highly trained mechanics operating 2, 3 and 4 axis CNC milling machines
- A comprehensive welding facility using both TIG and MIG welders

Research Support

- The workshop designs, constructs and supports all departmental research activities even when they require us to work off site.
Teaching Courses

- The workshop runs formal teaching courses in mechanical workshop techniques for any undergraduate, postgraduate student or PDRA.

Electronics Workshop and Design Facility

[www.durham.ac.uk/cmp/members/services/](http://www.durham.ac.uk/cmp/members/services/)

The Electronics Workshop and Design facility produces printed circuit boards and provides an equipment repair service. They are also available to provide general advice and guidance on all electrical and electronics theory including a one-stop electronic design capability, with the aim of producing electronic instruments or engineering solutions, often from first principles.

The Electronics Workshop is located on the first floor of the Physics department in Room 133 and is supported by five electronics technicians.

Research and Teaching Technicians

[www.durham.ac.uk/cmp/members/services/](http://www.durham.ac.uk/cmp/members/services/)

The research technicians are able to assist with and advise on experimental set up and equipment. They also assist with the disposal of waste materials. The teaching technicians are responsible for setting up and maintaining the equipment for the undergraduate laboratories during term-time and support research groups out of term. There are 6 research and 6 teaching technicians.

Information Technology in Physics

[www.durham.ac.uk/cmp/members/services/](http://www.durham.ac.uk/cmp/members/services/)

In addition to the University Computing Information Services (CIS), the Physics Department has a specialist IT support service. It provides network and computing services, from departmental network setup to administrative computing needs. The IT support service is located in room 21 on the first floor in the Physics Department and is supported by 3 technicians.

Audio Visual

[www.durham.ac.uk/cmp/members/services/](http://www.durham.ac.uk/cmp/members/services/)

AV is located in room 23 on the ground floor of the Physics Department and supported by 3 staff. There is a wide range of support activities: printing, scanning and laminating; photography; video; desktop publishing/ graphic design; Web and CMS design and management.

Electron Microscopy

[www.durham.ac.uk/electron.microscopy](http://www.durham.ac.uk/electron.microscopy)

The Durham GJ Russell Facility is a joint facility between the Faculty of Science (i.e. Physics, Chemistry, Earth Sciences, Engineering and Biological and Biomedical Sciences). It is based in the Ogden Centre, Department of Physics. Using state-of-the-art microscopes it can extract structural and chemical information at the nanometre and atomic scale. A wide range of specimens including semiconductors, oxides, magnetic materials, minerals and nanostructures are currently being investigated. Furthermore, using a focused ion-beam microscope, novel structures, such as MEMS and NEMS devices can be engineered. It also has extensive specimen preparation facilities which cover many of the techniques commonly used in the physical sciences.
Technical Services Working Hours

**Michaelmas and Epiphany Terms:**
Mon, Tue, Thu, Fri  
9.00am - 1.00pm and 1.30pm - 5.15pm  
Wed  
9.00am - 1.00pm

**Summer Term and Out of Term Time:**
Mon - Thu  
9.00am - 1.00pm and 1.30pm - 5.15pm  
Fri  
9.00am - 1.00pm

**Disclaimer**
Every effort has been made to ensure that all information is accurate at the time of going to press. However, changes may occur and Durham University reserves the right to amend or change any information contained in this brochure at any time.
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12. Physics Department, Durham University and the City

Download high resolution maps here: http://www.dur.ac.uk/cmp/training/resources/
<table>
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<th>Num</th>
<th>Building</th>
<th>Grid</th>
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</thead>
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<td>27</td>
<td>Administration (University Office)</td>
<td>E3</td>
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<tr>
<td>21</td>
<td>Advanced Study, Institute of</td>
<td>D4</td>
</tr>
<tr>
<td>41</td>
<td>Anthropology (Dawson Building)</td>
<td>E6</td>
</tr>
<tr>
<td>57</td>
<td>Applied Social Sciences (Soc. and Criminology)</td>
<td>F3</td>
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<tr>
<td>36</td>
<td>Applied Social Sciences - Sport</td>
<td>F3</td>
</tr>
<tr>
<td>25</td>
<td>Applied Social Sciences - Social and Community &amp; Youth Work</td>
<td>E3</td>
</tr>
<tr>
<td>41</td>
<td>Archaeology (Dawson Building)</td>
<td>E6</td>
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<tr>
<td>46</td>
<td>Assembly Rooms</td>
<td>D3</td>
</tr>
<tr>
<td>11</td>
<td>Biological and Biomedical Sciences</td>
<td>E7</td>
</tr>
<tr>
<td>7</td>
<td>Botanic Garden</td>
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<tr>
<td>43</td>
<td>Calman Learning Centre</td>
<td>E6/7</td>
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<tr>
<td>26</td>
<td>Careers Advisory Service</td>
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<tr>
<td>15</td>
<td>Chemistry Scarbrough Lecture Theatre</td>
<td>E6</td>
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<tr>
<td>30</td>
<td>College of St Hild and St Bede</td>
<td>G2/H2</td>
</tr>
<tr>
<td>46</td>
<td>Classics and Ancient History</td>
<td>D3</td>
</tr>
<tr>
<td>25</td>
<td>Collingwood College</td>
<td>D8</td>
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<tr>
<td>25</td>
<td>Combined Honours in Arts and Social Sciences E3</td>
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<tr>
<td>14</td>
<td>Computer Science</td>
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<tr>
<td>25</td>
<td>Counselling Service</td>
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<td>56</td>
<td>Dryburn Court (Ustinov College)</td>
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<tr>
<td>1</td>
<td>Durham Business School</td>
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<td>26</td>
<td>Durham Students’ Union (Dunelm House)</td>
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<td>43</td>
<td>Earth Sciences, e-Science Research Institute</td>
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<td>Economics and Finance</td>
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<td>29</td>
<td>Education</td>
<td>G2</td>
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<td>25</td>
<td>Elvet Riverside</td>
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<tr>
<td>14</td>
<td>Engineering</td>
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<tr>
<td>33</td>
<td>English Studies</td>
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<tr>
<td>35</td>
<td>Estates and Buildings</td>
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<tr>
<td>25</td>
<td>Faculty Office (Arts &amp; Humanities)</td>
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<td>15</td>
<td>Faculty Office (Science)</td>
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<tr>
<td>43</td>
<td>Faculty Office (Social Sciences &amp; Health)</td>
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<td>40</td>
<td>Geography, Applebey Lecture Theatre</td>
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<tr>
<td>51</td>
<td>Government and International Affairs - South End House (Politics)</td>
<td>C8</td>
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<tr>
<td>5</td>
<td>Government and International Affairs - Al-Qasimi Building (Middle Eastern and Islamic Studies)</td>
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<td>8</td>
<td>Grey College and Holgate House</td>
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<td>Hatfield College</td>
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<td>Health Centre</td>
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<td>Health and Safety Office</td>
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<tr>
<td>24</td>
<td>History</td>
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<tr>
<td>3</td>
<td>House of Sport</td>
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<td>Information Technology Service</td>
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<tr>
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<td>Josephine Butler College</td>
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<td>4</td>
<td>Van Mildert College</td>
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<tr>
<td>25</td>
<td>Language Centre</td>
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<td>24</td>
<td>Law (undergraduate)</td>
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<tr>
<td>57</td>
<td>Law (postgraduate)</td>
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<td>Library (Education Section)</td>
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<td>Library (Palace Green Section)</td>
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<td>Maiden Castle Sports Centre</td>
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<td>Mathematical Sciences</td>
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<td>Modern Languages</td>
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<td>Mountjoy Research Centre</td>
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<td>18</td>
<td>Old Fulling Mill Museum of Archaeology</td>
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<td>Oriental Museum</td>
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<td>Palatine House</td>
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<td>49</td>
<td>Refounders House/ Fonteyn Court/ Parsons Field House &amp; Court /Brooks House</td>
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<tr>
<td>15</td>
<td>Security Office</td>
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<td>54</td>
<td>Services for Students with Disabilities (DUSSD) G2</td>
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<td>4</td>
<td>Van Mildert College</td>
<td>B8/C8</td>
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<tr>
<td>2</td>
<td>St Aidan’s College and Lindisfame Centre</td>
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<td>19</td>
<td>St Chad’s College</td>
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<td>St Cuthbert’s Society</td>
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<td>9</td>
<td>Trevelyan College and Sir James Knott Hall</td>
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<tr>
<td>21</td>
<td>Union Society</td>
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<td>23</td>
<td>University College (Castle)</td>
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<tr>
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<td>Ushaw College</td>
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<td>Van Mildert College</td>
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<tr>
<td>42</td>
<td>Visitor Information Point</td>
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</tbody>
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This Diary of Events is subject to change; check the Centre for Materials Physics webpages at: [http://www.dur.ac.uk/cmp/meetings/events](http://www.dur.ac.uk/cmp/meetings/events) [http://www.dur.ac.uk/cmp/cmp_society/](http://www.dur.ac.uk/cmp/cmp_society/) and [http://www.dur.ac.uk/cmp/meetings/im](http://www.dur.ac.uk/cmp/meetings/im). Please note that you can download the content for these events into your electronic diary easily from the Centre for Materials Physics web-pages using the iCalendar feature. Teaching demands usually require meetings to start/finish at 5 minutes after/before the hour.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michaelmas Term (10 wks) : 8th Oct 2012 - 14 Dec 2012 Michaelmas Term (Induction week 1st Oct)</td>
<td>Monday 24th Sept - Monday 10 Dec inc. (12 weeks).</td>
<td>1.00pm - 2.00pm</td>
<td>See web-pages (Ph115, SJK, Calman..)</td>
</tr>
<tr>
<td>Friday 28th Sept</td>
<td>All day</td>
<td>A fabulous location</td>
<td>CMP Away Day (Contact: E Bromley)</td>
</tr>
<tr>
<td>Week 0: Friday 5th Oct</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>Core Staff (PI) meeting (Contact: M Szablewski)</td>
</tr>
<tr>
<td>Week 1: Friday 12th Oct</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>CMP Society Meeting (Contact: L Small)</td>
</tr>
<tr>
<td>Week 2 - Week 9: Start Monday 15th Oct</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>CMP+Atmol Postgraduate lectures (Contact: D Atkinson)</td>
</tr>
<tr>
<td>Weeks 2, 4, 6 and 8: Wednesday 17th Oct</td>
<td>Buffet: 12.30pm - 1.00 pm</td>
<td>Seminar: 1.00pm - 2.00 pm</td>
<td>Ph 30</td>
</tr>
<tr>
<td>Week 5: Tuesday 6th Nov</td>
<td>1.00pm - 3.00pm</td>
<td>Sir James Knott Room (Ph 132)</td>
<td>Centre for Materials Physics Open Day – Research Poster (Contact: M Szablewski)</td>
</tr>
<tr>
<td>Epiphany Term (9 wks): 14 Jan 2013 - 15 March 2013</td>
<td>Monday 7th Jan - Monday 11th Mar inc. (10 weeks)</td>
<td>1.00pm - 2.00pm</td>
<td>See web-pages (Ph115, SJK, Calman..)</td>
</tr>
<tr>
<td>Week 0: Friday 11th Jan</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>Core Staff (PI) meeting (Contact: M Szablewski)</td>
</tr>
<tr>
<td>Week 1: Friday 18th Jan</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>CMP Society Meeting (Contact: L Small)</td>
</tr>
<tr>
<td>Week 2 - Week 9: Start Monday 21st Jan</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>CMP+Atmol Postgraduate lectures (Contact: D Atkinson)</td>
</tr>
<tr>
<td>Week 2, 4, 6 and 8: Wednesday 23rd Jan</td>
<td>Buffet: 12.30 pm - 1.00 pm</td>
<td>Seminar: 1.00 pm - 2.00 pm</td>
<td>Ph 30</td>
</tr>
<tr>
<td>Easter Term (9 wks): 22 Apr 2013 - 21 June 2013 (Easter Monday 1st April)</td>
<td>Mon 15th April - Mon 17th June inc. (10 weeks)</td>
<td>1.00pm - 2.00pm</td>
<td>See web-pages (Ph115, SJK, Calman..)</td>
</tr>
<tr>
<td>Week 0: Friday 19th April</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>Core Staff (PI) meeting (Contact: M Szablewski)</td>
</tr>
<tr>
<td>Week 1: Friday 26th April</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>CMP Society Meeting (Contact: L Small)</td>
</tr>
<tr>
<td>Week 9: Friday 21st June</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>Core Staff (PI) meeting (Contact: M Szablewski)</td>
</tr>
<tr>
<td>Week 10: Wed 26th June</td>
<td>1.00pm</td>
<td>Ph 30</td>
<td>Postgraduate mini-symposium (Contact: G Cross) A series of talks by year 2/3 postgraduate students</td>
</tr>
<tr>
<td>Week 0: Thursday 26th Sept</td>
<td>1.00pm</td>
<td>Ph132</td>
<td>Core Staff (PI) meeting (Contact: M Szablewski)</td>
</tr>
<tr>
<td>Week 0: Friday 27th Sept</td>
<td>All day</td>
<td>An even more fabulous location</td>
<td>CMP Away Day (Contact: E Bromley)</td>
</tr>
</tbody>
</table>

Times, locations and dates are subject to change (see CMP web pages at [http://www.dur.ac.uk/cmp/](http://www.dur.ac.uk/cmp/))