

PH450 Project Talks 2019-20

Wednesday 19th February 2020

Room JA3.27

| 1300 | Family Name | Given     | Project Title                                                                             | Primary Supervisor      | Secondary                            |
|------|-------------|-----------|-------------------------------------------------------------------------------------------|-------------------------|--------------------------------------|
| 1315 | MacKintosh  | Kirsty    | Evaluating Spot-Finding Methods                                                           | Sebastian van de Linde  | Daniel Oi                            |
| 1330 | Cairney     | Stephanie | Computational Methods in Single-Molecule Localization Microscopy                          | Sebastian van de Linde  | Oliver Henrich                       |
| 1345 | Miller      | Lennard   | Construction and Characterisation of a 3D Printed Holographic Microscope                  | Brian Patton            | David McKee                          |
| 1400 | Smith       | Lauren    | Generating and using standing waves for applications in optical microscopy                | Gail McConnell          |                                      |
| 1415 |             |           |                                                                                           |                         |                                      |
| 1430 | Thompson    | Bethany   | Investigation of polytypism in nitride semiconductors                                     | Carol Trager-Cowan      | Jochen Bruckbauer, Gergely Ferenczi  |
| 1445 | Jonusas     | Paulius   | Tailoring multilayer semiconductor structures for hybrid quantum hardware                 | Konstantinos Lagoudakis | TBA                                  |
| 1500 | Dickson     | Euan      | Investigation of spectral characteristics of UV LEDs                                      | Jochen Bruckbauer       | Robert W. Martin, Carol Trager-Cowan |
| 1515 | Foia        | Patricia  | Pathological modifications in proteins detected by their intrinsic fluorescence           | Olaf Rolinski           | Yu Chen                              |
| 1530 |             |           |                                                                                           |                         |                                      |
| 1545 | Macintyre   | Hazel     | Investigation of $\beta$ -Gallium Oxide semiconductors for power electronics applications | Naresh Kumar            | Rob Martin                           |
| 1600 | Nicol       | David     | Ga2O3 solar-blind detectors and the quest for the optimal electrical contacts             | Fabien Massabuau        | Paul Edwards                         |
| 1615 | Nicolson    | Ewan      | Investigation of Gallium Oxide semiconductors for UV applications                         | Rob Martin              | Fabien Massabuau                     |
| 1630 |             |           |                                                                                           |                         |                                      |
| 1645 |             |           |                                                                                           |                         |                                      |

Room JA3.17

| 1300 | Family Name | Given       | Project Title                                                                   | Primary Supervisor | Secondary                 |
|------|-------------|-------------|---------------------------------------------------------------------------------|--------------------|---------------------------|
| 1315 | McCullough  | Jake        | Accelerometer-based Motion Tracking                                             | Paul Griffin       | Billy Wallace             |
| 1330 | McDermid    | Lewis       | Digital Feedback For Control of Quantum Optics Experiments                      | Paul Griffin       | Oliver Burrow             |
| 1345 | Alexakis    | Emmanouil   | Observing beam propagation using fluorescence                                   | Aidan Arnold       | Paul Griffin              |
| 1400 |             |             |                                                                                 |                    |                           |
| 1415 |             |             |                                                                                 |                    |                           |
| 1430 | Parsonage   | Christopher | Propagation of orbital-angular momentum beams through a scattering medium       | Paul Griffin       | David McKee               |
| 1445 | Sattery     | Susan       | Scattering of light beams carrying angular momentum                             | Francesco Papoff   | Alison Yao                |
| 1500 | Auld        | Fraser      | Building A 3D Airborne Fluxgate Magnetometer for Geomagnetic Field Measurements | Terry Dyer         | Erling Riis               |
| 1515 | MacLean     | Craig       | Building A 3D Airborne Fluxgate Magnetometer for Geomagnetic Field Measurements | Terry Dyer         | Erling Riis               |
| 1530 |             |             |                                                                                 |                    |                           |
| 1545 | McLaughlin  | Beth        | Grating magneto-optical trap modelling                                          | Aidan Arnold       | Paul Griffin              |
| 1600 | Maneely     | Scott       | Atomic Physics Game Design for Outreach Activities                              | Stuart Ingleby     | Paul Griffin, Gordon Robb |
| 1615 | Schroff     | Paul        | Holographically generated light potentials for quantum simulation               | Stefan Kuhr        | TBA                       |
| 1630 |             |             |                                                                                 |                    |                           |
| 1645 |             |             |                                                                                 |                    |                           |

Room JA5.02

| 1300 | Family Name | Given  | Project Title                                                                                                  | Primary Supervisor  | Secondary                      |
|------|-------------|--------|----------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------|
| 1315 | Dickson     | Alex   | Space Radiation Reproduction and Testing                                                                       | Bernhard Hidding    | Mark Wiggins                   |
| 1330 | Duncan      | Craig  | Space Radiation Reproduction and Testing                                                                       | Bernhard Hidding    | Mark Wiggins                   |
| 1345 | Hamilton    | Scott  | Monte Carlo Modelling of Particle Beam-Matter Interaction                                                      | Bernhard Hidding    | Mark Wiggins                   |
| 1400 | Sahota      | Goran  | Beam-driven Plasma Wakefield Acceleration (PWFA)                                                               | Bernhard Hidding    | Dino Jaroszynski               |
| 1415 |             |        |                                                                                                                |                     |                                |
| 1430 | Docherty    | Lauren | Radiation Reaction                                                                                             | Adam Noble          | Dino Jaroszynski, Samuel Yoffe |
| 1445 | Getchell    | Claire | Nonlinear waves in plasmas                                                                                     | Adam Noble          | Dino Jaroszynski               |
| 1500 | Cairns      | Adam   | A coherent synchrotron source based on a laser-plasma wakefield accelerator                                    | Antoine Maitrallain | Dino Jaroszynski               |
| 1515 | Anderson    | Harry  | Ion Channel Laser with Large Oscillation Amplitude                                                             | Bernhard Ersfeld    | Dino Jaroszynski               |
| 1530 |             |        |                                                                                                                |                     |                                |
| 1545 | McKnight    | Amy    | Electron Beam Therapy                                                                                          | Dino Jaroszynski    | Karolina Kokurewicz            |
| 1600 | McWeillis   | Hamish | Plasma Gratings as Optical Elements with High Damage Thresholds for Ultrashort, Extremely Intense Laser Pulses | Dino Jaroszynski    | Gregory Vieux, George Holt     |
| 1615 | Lee         | Lok    | Terahertz radiations driven by two-colour lasers in gas                                                        | Zhengming Sheng     | Weimin Wang                    |
| 1630 |             |        |                                                                                                                |                     |                                |
| 1645 |             |        |                                                                                                                |                     |                                |

Wednesday 26th February 2020

Room JA3.27

| 1300 | Family Name | Given   | Project Title                                                                 | Primary Supervisor | Secondary               |
|------|-------------|---------|-------------------------------------------------------------------------------|--------------------|-------------------------|
| 1315 | Chan        | Matthew | Scattering of twisted light by chiral molecules                               | Robert Cameron     | Alison Yao              |
| 1330 | McCallum    | Abbie   | Cold Atom-Light Interactions                                                  | Gordon Robb        | Brian McNeil            |
| 1345 | Ferguson    | Kieran  | Photon statistics of small lasers                                             | Thorsten Ackemann  | Konstantinos Lagoudakis |
| 1400 |             |         |                                                                               |                    |                         |
| 1415 |             |         |                                                                               |                    |                         |
| 1430 | Gruber      | Heidi   | Astigmatic mirror multipass absorpton cells for long path length spectroscopy | Nigel Langford     | Alison Yao              |
| 1445 | Chisholm    | Alice   | Interactive Physics Simulations                                               | Gordon Robb        | Nigel Langford          |
| 1500 | Svensson    | Sophie  | Nonlinear Optical Loop Mirrors Based on 3 X 3 fibre optic couplers            | Nigel Langford     | Alison Yao              |
| 1515 |             |         |                                                                               |                    |                         |
| 1530 |             |         |                                                                               |                    |                         |
| 1545 |             |         |                                                                               |                    |                         |
| 1600 |             |         |                                                                               |                    |                         |
| 1615 |             |         |                                                                               |                    |                         |
| 1630 |             |         |                                                                               |                    |                         |
| 1645 |             |         |                                                                               |                    |                         |

Room JA3.17

| 1300 | Family Name | Given      | Project Title                                                   | Primary Supervisor | Secondary        |
|------|-------------|------------|-----------------------------------------------------------------|--------------------|------------------|
| 1315 | Mir         | Tariq      | Topological Insulators                                          | Benjamin Hourahine | Andrew Daley     |
| 1330 | Abbot       | James      | Quantum transport in superconducting wires and cold atoms       | Andrew Daley       | François Damanet |
| 1345 | Barr        | Kristopher | Coherent Perfect Amplification of Light                         | John Jeffers       | Daniel Oi        |
| 1400 | Mallon      | Stephen    | Two-Photon Young's Beamsplitters for Communication              | John Jeffers       | Daniel Oi        |
| 1415 |             |            |                                                                 |                    |                  |
| 1430 | Flouri      | Sofia      | Characterising Digital Camera Sensors                           | Daniel Oi          | TBA              |
| 1445 | Sarguroh    | Khadija    | Quantum Random Number Generation                                | Daniel Oi          | John Jeffers     |
| 1500 | Keenan      | Alex       | Soliton Glass                                                   | Gian-Luca Oppo     | Francesco Papoff |
| 1515 | McCormick   | Cameron    | Opto-mechanics of Bose-Einstein Condensates in Optical Cavities | Gian-Luca Oppo     | Gordon Robb      |
| 1530 |             |            |                                                                 |                    |                  |
| 1545 |             |            |                                                                 |                    |                  |
| 1600 |             |            |                                                                 |                    |                  |
| 1615 |             |            |                                                                 |                    |                  |
| 1630 |             |            |                                                                 |                    |                  |
| 1645 |             |            |                                                                 |                    |                  |

Room JA5.02

| 1300 | Family Name | Given  | Project Title                                                                                                               | Primary Supervisor | Secondary               |
|------|-------------|--------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------|
| 1315 | Ryan        | Calum  | Plasma instabilities in intense laser-foil interactions                                                                     | Martin King        | Ross Gray, Paul McKenna |
| 1330 | Bacon       | Ewan   | Laser-driven ion acceleration from ultrathin foils undergoing relativistic self-induced transparency                        | Robbie Wilson      | Ross Gray, Paul McKenna |
| 1345 | Crampsey    | Ben    | Development of field-pickup diagnostics for high-power microwave signal analysis                                            | Philip MacInnes    | Kevin Ronald            |
| 1400 | Harra       | David  | Scattering of Relativistic Electrons off Electromagnetic Ion Cyclotron Waves                                                | Bengt Eliasson     | Kevin Ronald            |
| 1415 |             |        |                                                                                                                             |                    |                         |
| 1430 | Braunholtz  | Rosie  | Atomic Processes for Astrophysical Plasmas                                                                                  | Junjie Mao         | Nigel Badnell           |
| 1445 | Brodie      | Seoras | Atomic Processes for Astrophysical Plasmas                                                                                  | Nigel Badnell      | Junjie Mao              |
| 1500 | O'Connor    | Kieran | Simulation and measurement of folded-waveguide structure                                                                    | Craig W. Robertson | Adrian W. Cross         |
| 1515 |             |        |                                                                                                                             |                    |                         |
| 1530 |             |        |                                                                                                                             |                    |                         |
| 1545 | Afxenti     | Ivi    | The theory of X-ray Free electron Lasers                                                                                    | Brian McNeil       | Gordon Robb             |
| 1600 | Derrick     | Taylor | Computational Modelling of X-ray Free Electron Lasers                                                                       | Brian McNeil       | Gordon Robb             |
| 1615 | Harrison    | Jack   | Design, simulation and experiments of an Extended Interaction Oscillator based on a pseudospark sourced sheet electron beam | Adrian W. Cross    | Liang Zhang             |
| 1630 |             |        |                                                                                                                             |                    |                         |
| 1645 |             |        |                                                                                                                             |                    |                         |

To be Announced

|     |           |      |                                                           |                  |               |
|-----|-----------|------|-----------------------------------------------------------|------------------|---------------|
| TBA | McCulluch | Kerr | Engineering semiconductor defects for quantum electronics | Alessandro Rossi | Robert Martin |
|-----|-----------|------|-----------------------------------------------------------|------------------|---------------|

|     |          |        |                                                                 |                 |                     |
|-----|----------|--------|-----------------------------------------------------------------|-----------------|---------------------|
| TBA | Adair    | Andrew | Photonic Neurons: Spiking information processing with lasers    | Antonio Hurtado | Thorsten Ackemann   |
| TBA | Bennett  | Daniel | Spectroscopy of Dy-doped crystals for mid-IR laser applications | Alan Kemp       | Vasili Savitski     |
| TBA | Nikolov  | Boyko  | Generation and detection of photon pairs in integrated circuits | Lucia Caspani   |                     |
| TBA | Tsina    | Iaonna | 3D imaging using high speed LEDs and a smartphone camera        | Michael Strain  | Johannes Herrnsdorf |
| TBA | Parker   | Grace  | Photon velocity control on a silicon photonic chip              | Michael Strain  | Benoit Guilhabert   |
| TBA | Monaghan | Martin | Mapping brain activity: A multi-channel fiber photometry device | Niall McAlinden | Keith Mathieson     |