

PHY342

PHYSICS – THIRD YEAR PROJECT LIST

<u>No.</u>	<u>Supervisor(s)</u>	<u>Student(s)</u>	<u>Type</u>	<u>Project Title</u>
1.	Dr C Booth		C	Cooling the MICE target
2.	Dr C Booth	J Collins	C	The high energy cosmic ray cut-off
3.	Dr C Booth		C	The Neutrino Factory and neutrino oscillations
4.	Dr E Campbell		T/C	Cloud quantum computing: the IBM quantum experience
5.	Dr S Cartwright	K Corrigan	D/TE	Design of a first or second year option course
6.	Prof J Cockburn		D/E/TE	Development of demonstrations for Year 2 electromagnetism lectures
7.	Prof J Cockburn	W Castle H Johnson	E	Physics of stringed musical instruments
8.	Prof J Cockburn		E	Optical spectroscopy of semiconductors
9.	Dr W Durham	T McDonald	C/A	Using “big data” to quantify the behaviour of bacteria
10.	Prof M Fox		E	Atomic spectroscopy
11.	Prof M Fox		E	Shot Noise
12.	Dr M Grell		E	Photoconductivity in CdS
13.	Dr R Hawkins		T/C	Bacteria swimming trajectories
14.	Dr R Hawkins		T/C	Spread of epidemics
15.	Dr R Hawkins		T/C	Growth of a cancer tumour
16.	Drs R Hawkins & T Vickey		C	Automating task scheduling for physicists
17.	Prof J Hobbs	A Matthews M Sanz Orell	E	Measuring anisotropic mechanical properties of the bacterial cell wall using atomic force microscopy
18.	Prof J Hobbs		E	Writing at the nanoscale with atomic force microscopy
19.	Prof J Hobbs		E	Watching polymers crystallise with the atomic force microscope
20.	Dr P Kok		T	Quantum metrology – measurements at the Heisenberg limit
21.	Dr P Kok	Z Chave-Cox	T	Foundations of quantum mechanics
22.	Dr D Krizhanovskii	F Smeaton	D/E	Laser optical beams carrying non-zero orbital angular momentum
23.	Dr D Krizhanovskii & M Sich		E/C	Spectroscopy of exciton polaritons
24.	Dr D Krizhanovskii & P Walker		C/D	Design of optical microstructures for on-chip nonlinear optical circuits
25.	Dr V Kudryavtsev		D	Has dark matter been discovered?
26.	Dr V Kudryavtsev & E Korolkova		C	Background events in the LZ dark matter experiment
27.	Dr V Kudryavtsev		C	Neutron production in radioactive processes
28.	Dr V Kudryavtsev		C	Activation of materials by cosmic rays
29.	Drs K Lohwasser & C Anastopoulos		E/C/A	Measuring fundamental properties of the Standard Model
30.	Drs K Lohwasser		C/A	Investigating properties of W bosons in diboson production
31.	Drs C McDaid & J McMillan		E	Environmental radon detection using party balloons
32.	Dr J McMillan	H Pinder C Rogerson	E	Monitoring the neutron and gamma emissions of the pulsed neutron fusion generator
33.	Dr M Malek	K Aylward M H Jumali	A	Testing predictions: How accurate is the weather forecast?
34.	Dr M Malek		C	Using antineutrinos for nuclear threat reduction

35.	Dr M Malek		C	The next galactic supernova burst
36.	Dr M Mears		E/T	Glass transition dynamics of confined macromolecular systems
37.	Dr M Mears		E	Viscosity at the molecular level
38.	Dr M Mears		E/D	A new approach to measuring contact angles and surface energy
39.	Prof D Mowbray	E Pinson M Ridsdill-Smith	D/E	The physics of photography
40.	Prof D Mowbray		E/C	Interfacing and sensing with a Raspberry Pi
41.	Prof D Mowbray		D/E	Sound experiments for schools' talks
42.	Prof D Mowbray		D/E	Construction of equipment to demonstrate the properties and applications of light
43.	Prof N Spooner		E	Development of liquid argon particle detector technology for neutrino physics
44.	Prof N Spooner		C/A	Searches for Dark Matter with the CYGNUS directional detector
45.	Prof N Spooner		E	RADTRACK – new techniques to image particle interactions in gas for rare event physics and homeland security
46.	Prof N Spooner		E	New ways to measure and reduce environmental radon
47.	Prof A. Tartakovskii		D/C	Efficient light extraction from luminescent nanostructures in optoelectronic applications and nanoscience research
48.	Prof A. Tartakovskii		C	Principles of magnetic resonance
49.	Prof A. Tartakovskii		E	Optics of novel few-atom-thick two-dimensional materials
50.	Prof L Thompson		C	Development of a peak finding and fitting algorithm for the treatment of HPLC spectra
51.	Prof L Thompson		C	The computer simulation of ray tracing in a plastic scintillator
52.	Prof L Thompson		C	Simulation of muon scattering tomography for cargo container scanning
53.	Dr T Vickey		T/C	The physics of SCUBA diving
54.	Dr T Vickey		D/E	Semiconductor detectors in particle physics
55.	Dr T Vickey		E	Building a 'Tesla' Powerwall using old laptop batteries
56.	Prof D Whittaker		T	Dielectric multilayers
57.	Prof D Whittaker		E/T	Lorenz waterwheel
58.	Prof D Whittaker		E/T	The upside-down pendulum

E Experimental
A Data analysis

T Theory
D Design

C Computational
TE Teaching

Please see your supervisor as soon as possible in order to start work on your project!

Dr Chris Booth – Room D24