

## PHY341

## 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	<b>A French</b>	C	Cooling the MICE target
2.	Dr C Booth		C	The high energy cosmic ray cut-off
3.	Dr C Booth		C	The Neutrino Factory and neutrino oscillations
4.	Dr S Cartwright	<b>A Sioukra</b>	D/TE	Design of a first or second year option course
5.	Prof N Clarke		C	Nanoparticle diffusion in random networks
6.	Prof N Clarke	<b>A Barnes</b>	C	Can machine learning complement physical models?
7.	Prof J Cockburn		E	Physics of stringed musical instruments
8.	Prof M Fox	<b>J Greig B Norgrove</b>	E	Atomic spectroscopy
9.	Prof M Fox		E	Shot Noise
10.	Prof M Fox	<b>K Lo D Pennington</b>	C	The student-project allocation problem
11.	Dr M Grell	<b>B Fyson-Smith R Samrai</b>	E	A global sundial
12.	Dr M Grell	<b>A Bottrill M Hole</b>	T	The next Carrington event – Armageddon?
13.	Prof J Hobbs		E	Measuring anisotropic mechanical properties of the bacterial cell wall using atomic force microscopy
14.	Prof J Hobbs	<b>Z Gabri</b>	E	Writing at the nanoscale with atomic force microscopy
15.	Prof J Hobbs		E	Watching polymers crystallise with the atomic force microscope
16.	Dr P Kok		T	Quantum metrology – measurements at the Heisenberg limit
17.	Dr P Kok	<b>D Cimadom A Francis M Mears</b>	T	Foundations of quantum mechanics
18.	Dr D Krizhanovskii		D/E	Laser optical beams carrying non-zero orbital angular momentum
19.	Dr D Krizhanovskii & M Sich		E/C	Spectroscopy of exciton polaritons
20.	Dr D Krizhanovskii & P Walker		C/D	Design of optical microstructures for on-chip nonlinear optical circuits
21.	Dr V Kudryavtsev	<b>M Haigh S Theakston</b>	D	Has dark matter been discovered?
22.	Dr V Kudryavtsev & E Korolkova		C	Background events in the LZ dark matter experiment
23.	Dr V Kudryavtsev		C	Neutron production in radioactive processes
24.	Dr V Kudryavtsev		C	Activation of materials by cosmic rays
25.	Drs K Lohwasser & C Anastopoulos		E/C/A	Measuring fundamental properties of the Standard Model
26.	Drs K Lohwasser		C/A	Investigating properties of W bosons in diboson production
27.	Dr J McMillan		E	Monitoring the neutron and gamma emissions of the pulsed neutron fusion generator
28.	Dr M Malek		A	Testing predictions: How accurate is the weather forecast?
29.	Dr M Malek		C	Using antineutrinos for nuclear threat reduction
30.	Dr M Mears		E/T	Glass transition dynamics of confined macromolecular systems

31.	Dr M Mears	<b>S de Silva</b>	E	Viscosity at the molecular level
32.	Dr M Mears		E/D	A new approach to measuring contact angles and surface energy
33.	Prof D Mowbray		D/E	The physics of photography
34.	Prof D Mowbray	<b>N Fawcett D Gowland</b>	E/C	Interfacing and sensing with a Raspberry Pi
35.	Prof D Mowbray		D/E	Sound experiments for schools' talks
36.	Prof D Mowbray		D/E	Construction of equipment to demonstrate the properties and applications of light
37.	Dr R Parker	<b>H Alcock</b>		The evolution of inversely mass-segregated star clusters ( <i>reserved</i> )
38.	Dr M Quinn		E/C	Chaotic simple pendulum: compare experiment with simulations
39.	Dr M Quinn	<b>J Hibbert J Whitehouse</b>	C	Investigate chaotic motion of a compound pendulum using numerical simulation methods
40.	Dr M Quinn		E	Investigate chaotic motion of a compound pendulum using experimental methods
41.	Prof N Spooner		E	Development of liquid argon particle detector technology for neutrino physics
42.	Prof N Spooner	<b>R Dommett A Humpage</b>	C/A	Searches for Dark Matter with the CYGNUS directional detector
43.	Prof N Spooner		E	RADTRACK – new techniques to image particle interactions in gas for rare event physics and homeland security
44.	Prof N Spooner	<b>A Upreti H Zubair</b>	E	New ways to measure and reduce environmental radon
45.	Prof A. Tartakovskii		C	Principles of magnetic resonance
46.	Prof A. Tartakovskii	<b>L Allen</b>	E	Optics of novel few-atom-thick two-dimensional materials
47.	Prof L Thompson	<b>S Wilson</b>	C	Development of a peak finding and fitting algorithm for the treatment of HPLC spectra
48.	Dr T Vickey		C	Automating task scheduling for physicists
49.	Dr T Vickey	<b>H Simpson</b>	T/C	The physics of SCUBA diving
50.	Dr T Vickey		D/E/C	Deep machine learning to identify semiconductor sensor imperfections
51.	Prof D Whittaker		T	Dielectric multilayers
52.	Prof D Whittaker		E/T	Lorenz waterwheel
53.	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