PY4050 Project List – 2018

Notes:

1. This is the ***final*** list of Final Year Projects with code to be used during selection
2. If there is not a number following the project the assumption is that the project will work for either 5 or 10 credit projects
3. For those with many projects available, only a subset will be filled.

Andersson-Engels, Stefan

- **Andersson-Engels1** – Project in Biophotonics (more than one possible)

Anthony/Townsend:

- **Anthony1** - Raman amplification for next generation optical access networks (10)
- **Anthony2** - Time-resolved full-field (amplitude and phase) optical waveform measurement for transmitter characterisation (5 or 10)

Callanan, Paul:

- **Callanan1** - X-ray and optical observations of dynamically formed ultra compact binaries (10)
- **Callanan2** - Kepler photometry of Cataclysmic Variables
- **Callanan3** - Development of a Muon detector (10)

Corbett, Brian:

- **Corbett1** – Measure the speed of light on a benchtop
- **Corbett2** – Modal characteristic of lasers by spectra

Fahy, Stephen:

- **Fahy1** - Forbidden intervalley scattering in semiconductor alloys – a group theory analysis
- **Fahy2** - Ultrafast coupling of atomic vibrations and exciton states in 2-dimensional black phosphorous (10)

Gabuzda, Denise:

- **Gabuzda1** - Searching for AGN jets carrying helical jet B fields
- **Gabuzda2** - Improving code designed to search for RM gradients across AGN jets (5)

Gunning, Fatima:

- **Gunning1** - Modelling the Frequency Response of an Optical Modulator
- **Gunning2** - Modelling the Optical Properties of a Photonic Integrated Circuit

Kelleher, Bryan:

- **Kelleher1** – Experimental 1: Laser neuron dynamics
- **Kelleher2** – Experimental 2: Experimental phase space reconstruction
- **Kelleher3** – Theoretical 1: Laser neuron dynamics
- **Kelleher4** – Theoretical 2: Exotic dynamics in coupled semiconductor lasers

Maity Tuhin/Roy, Saibal:

- **Maity/Roy1** - Investigation of dynamic properties of exchange coupled magnetic nanopattern by micromagnetic simulation (10)
- **Maity/Roy2** - Investigation of dynamic properties of exchange coupled magnetic nanopattern
- by experimental analysis (10)

McCarthy, Paddy:

- **McCarthy1** – Parameterization of ion temperature vs. plasma parameters

McInerney, John:

- **McInerney1** – Model mode-locked laser stabilisation (5)
- **McInerney2** – Experimental dynamics of VECSELs (10)

O'Reilly, Eoin:

- **O'Reilly1** - Modelling of localization effects
- **O'Reilly2** - Built-in Electric Fields in GaN heterostructures (10)
- **O'Reilly3** - Boron-containing Alloys (10)

Pe'er, Asaf:

- **Pe'er1** – Population studies of Long / Short GRBs
- **Pe'er 2** – Properties of second (pair) photosphere
- **Pe'er 3** – Construct Monte-Carlo simulation of EM cascade following particle acceleration
- **Pe'er 4** – Study the properties of X-ray flares: predictions for pre-cursor emission from late-time measurements
- **Pe'er 5** – How can one explain the "fast-rise-exponential-decay" (FRED) shape of pulses?
- **Pe'er 6** – Analyze LOFAR data

Peters, Frank:

- **Peters1** – Laser Measurements (with possible theory)
- **Peters2** – Laser Theory
- **Peters3** – Laser Linewidth
- **Peters4** – Optical Device Simulations
- **Peters5** – Software development for Photonic Integrated Circuits
- **Peters6** – Building Things (10)

Quinn, Aidan:

- **Quinn** – none this year

Ruschhaupt, Andreas:

- **Ruschhaupt1** - Stability of Shortcuts to Spatial Adiabatic Passage
- **Ruschhaupt2** - Effect of Poisson Noise on Adiabatic Processes
- **Ruschhaupt3** - Visualisation of Quantum Algorithms
- **Ruschhaupt4** - ???? (Very interesting/very difficult)

Ruth, A. Andy:

- **Ruth1** - From optical cavity mode structure to dual comb spectroscopy (10)
- **Ruth2** - Absorption spectrum of ammonia by Fourier Transform cavity enhanced absorption spectroscopy (5)
- **Ruth3** - Detection of air glow emissions from the mesosphere (10)