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PROFILE

I am a PhD student at the University of Southampton, under the supervision of Christian Knigge, simulating the light emitted when a star is ripped apart by a black hole, in something known as a Tidal Disruption Event. I am part of the Next Generational Computational Modelling Centre for Doctoral Training (NGCM-CDT) and also the Computational Modelling Group, both based at the University of Southampton. I completed my integrated masters in physics with astrophysics at the University of Kent, graduating first class with honours in 2016. During my PhD, I have had the opportunity to build my computational and communication skills, attending international workshops and conferences to share my work with the community and have had the opportunity to work in international collaborations. At Southampton, I have had access to world-class HPC facilities and training in a wide range of programming languages and frameworks such as, but not limited to, *C*, MPI, CUDA, TensorFlow and Python.

I am now looking to use and improve the skills which I developed during my PhD in roles outside of academia.

EMPLOYMENT

2016 – 2017

Customer relation manager

Yorkshire Water Business Services, Bradford

- Account manager for key customer businesses
- Solved complex billing queries and meter readings

2016 – 2016

Data entry clerk

Loop Customer Management, Bradford

- Temporary position, transitioned into permanent role with Yorkshire Water Business Services

EDUCATION

2017 – current

iPhD: next generation computational modelling

School of Physics and Astronomy, University of Southampton

- PhD thesis: *Shining lights, even in death: modelling the line spectra of Tidal Disruption Events*
- Year 1: integrated master; statistics, computational techniques and programming/dev skills with a strong focus on state-of-the-art high performance computing and cross-disciplinary communication
- Year 2 - 4: PhD research in computational astrophysics; maintained and developed (legacy) Monte Carlo code `PYTHON`

2012 – 2016

MPhys: physics with astrophysics

School of Physical Sciences, University of Kent

- Awarded first class with honours
- Bachelors dissertation: *Measuring the proper motion of nearby stars and brown dwarfs*
- Masters thesis: *Adiabatic hydrodynamic simulations of two-dimensional inviscid extragalatic jets*

SKILLS

Core skills

Modelling
- Published *state-of-the-art* research using modern computational techniques
- Big data experience, from large grids of Monte Carlo simulations
- Streamlined development work-flow for legacy *C* codes
- Applied modern statistical modelling techniques to my research

Communication
- Strong technical writing style
- Author on multiple journal articles
- Experienced presenter for expert and non-expert audiences
- Demonstrator for introduction to Python and version control courses

Visualisation
- Experienced with multiple modern visualisation tools
- Proficient in creating publication grade figures using, e.g. `matplotlib`

Collaboration
- Invaluable member of multiple international and national collaborations

Project management
- Principle investigator of multiple research projects
- Co-supervised MSc student projects

Programming languages *C*; Python; Fortran; LaTeX; R; Rust; SQL

Software Git; CUDA; MPI; OpenMP; Django; Jekyll; Microsoft Office; Unix; Windows; macOS

PROJECTS

`pypython` A fully featured Python package designed to analyse and visualise the output from the radiative transfer program `PYTHON` and also contains a family of functions useful in scientific computation.
`https://github.com/saultyevil/pypython`

`Monte Carlo radiative transfer` Example programs of a simple Monte Carlo radiative transfer problem, written in multiple programming styles and languages.
`https://github.com/saultyevil/mcrt`

`atomix` A bespoke terminal based tool, designed for browsing the atomic data files in scientific software.
`https://github.com/saultyevil/atomix`

`website` A personal webpage and portfolio, developed using Jekyll.
`https://github.com/saultyevil/saultyevil.github.io`

`adminbot` A Discord bot, written using discordpy, which uses Markov Chains to generate sentences and learns how to communicated from repeated user interaction.
`https://github.com/saultyevil/adminbot`

PUBLICATIONS

2021 Parkinson et al., *Optical line spectra of tidal disruption events from reprocessing in optically thick outflows*, Monthly Notices of the Royal Astronomical Society, submitted

2020 Parkinson et al., *Accretion disc winds in tidal disruption events: ultraviolet spectral lines as orientation indicators*, Monthly Notices of the Royal Astronomical Society, Volume 494, Issue 4, June 2020, Pages 4914–4929