Peter Levens

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Education

University of Glasgow – Postgraduate **2013 - Present**

- Ph.D. in Solar Astronomy
- Began in October 2013
- Researching solar prominences and tornadoes using spectroscopic techniques

First author papers

- "A solar tornado observed by EIS: Plasma diagnostics", P. J. Levens, N. Labrosse, L. Fletcher, B. Schmieder, *Astronomy & Astrophysics*, 2015, 582, A27.
- "Structure of prominence legs: Plasma and magnetic field", P. J. Levens, B. Schmieder, N. Labrosse, A. López Ariste, *Astrophysical Journal*, 2016, 818, 31L.
- "Magnetic field in atypical prominence structures: Bubble, Tornado, and Eruption", P. J. Levens, B. Schmieder, A. López Ariste, N. Labrosse, K. Dalmasse, B. Gelly, *Astrophysical Journal*, 2016, 826, 164L.

Conference proceedings

- "Polarimetric measurements in prominences and "tornadoes" observed by THEMIS", B. Schmieder, A. López Ariste, P. Levens, N. Labrosse, K. Dalmasse, *IAU Symposium Proceedings No. 305*, 2015, 275–281.
- "Magnetic Field and Plasma Diagnostics from Coordinated Prominence Observations", B. Schmieder, P. Levens, K. Dalmasse, N. Mein, P. Mein, A. López-Ariste, N. Labrosse, P. Heinzel, *Astronomical Society of the Pacific, ASP Conference Series, Vol. 504*, 2016, 119.
- "Prominence plasma and magnetic field structure - A coordinated observation with IRIS, Hinode and THEMIS", B. Schmieder, N. Labrosse, P. Levens, A. López-Ariste, *41st COSPAR Scientific Assembly*, 2016

Meetings attended, talks given and posters presented

- June 2016 – Talk at the National Astronomy Meeting in Nottingham
- June 2016 – Talk at the IRIS-6 meeting in Stockholm, Sweden
- November 2015 – Presented a poster at the SUPA Cormack Astronomy Meeting in Edinburgh
- September 2015 – Presented a talk at the Hinode 9 meeting in Belfast
- July 2015 – Presented a poster at the National Astronomy Meeting in Llandudno
- May 2015 – Presented a talk at the IRIS-4 Workshop in Boulder, Colorado, USA

- January 2015 – Presented a talk at Royal Astronomical Society IRIS Specialist Discussion Meeting in London
- September 2014 – Presented a talk at the European Solar Physics Meeting in Dublin
- September 2014 – Attended the STFC Advanced Summer School in Dundee
- June 2014 – Attended the National Astronomy Meeting in Portsmouth
- February 2014 – Poster presented at Royal Astronomical Society solar prominence meeting in London
- November 2013 – Attended the SUPA Cormack Astronomy Meeting in Edinburgh

Funded international trips

- December 2016 – I was selected to be a member of the IRIS Science Team as a science planner. I was one of three new science planners to be selected, and was required to spend two weeks at the LMSAL facility in Palo Alto, CA, for training and planning duties. As a science planner for the IRIS satellite, I was responsible for coordinating satellite operations with observers to ensure correct target selection and that observations were performed as requested.
- November 2014 to February 2015 – I was awarded funding as part of SUPA's Long Term Attachment scheme to spend four months in Paris at the Meudon Observatory. During this time I had access to knowledge and experience that was not be availabe to me in the UK, beginning the analysis of data gathered during the May and July observing campaigns.
- May and July 2014 – I was part of observing team that was awarded funding by SOLARNET to use the THEMIS telescope in the Canary Islands. The proposal was to observe mainly solar prominences using the spectropolarimeter of THEMIS in order to build a picture of the magnetic field structures within. During this time we had observing support from both the Hinode and IRIS spacecrafts, so a great deal of organisation and planning was required in order to successfully complete these simultaneous observations. It was also a good introduction to the challanges faced when using ground-based solar telescopes.

Astronomy outreach

As a member of the Astronomy department at the University of Glasgow, I regularly get the opportunity to be involved in community outreach events. We provide observatory tours and talks, and we have a mobile planitarium that we regularly take to schools and science events, and give planitarium shows to people of all ages. As well as being involved in these tours, talks and shows, I have also helped out at the Glasgow Science Centre in a 'meet the expert' stall as part of a science day for primary school children during the Glasgow Science Festival.

University of Glasgow - Undergraduate **2009 - 2013**

- BSc. Physics and Astronomy
- Degree classification: With Honours of the First Class

Honours courses and grades

- Galaxies – A3
- High Energy Astrophysics – A3
- Stellar Structure and Evolution – A5
- Thermal Physics – A1
- Quantum Mechanics – A3
- Mathematical Methods I – B1
- Exploring Planetary Systems – A5
- Instruments in Optical and Radio – A2
- Astronomical Data Analysis – B1
- Nuclear and Particle Physics – B1
- Electromagnetic Theory I – A3
- Atomic Systems – B2

- Waves and Diffraction – B1

Honours years project information:

- Final year honours project – Prominence Contribution to Solar Irradiance as observed by EVE - Working with data collected by the Solar Dynamics Observatory we looked into whether solar prominences, viewed above the limb, contribute noticably to the total solar irradiance. A great amount was learnt about the Sun and its activity, and programming in IDL over the course of the project was very interesting. I became proficient at using IDL, and gained a good level of competence in the language. On top of this, anaylsing real data in a way that had not been explored before was good experience for continued studies at postgraduate level.
- Individual research project – The Moons and Rings of the Jovian Planets - comprising a 20 minute presentation on the topic to peers and members of staff, as well as a 15 page report. This was largely concerned with researching the chosen topic, and much was learnt, with additional experience in speaking in front of an audience and writing a report in the style of a scientific journal.
- Final year lab project – Solar System Simulator - Using MATLAB a solar system simulator has been built up. Starting with a simple two-dimensional, two body system of a fixed Sun and the Earth orbiting it, code has been adapted and written to include each of the major solar system bodies in three-dimensions, as well as mutual interactions between planets and relativistic effects. Code was also written to create AVI movies from the simulation, and to make the simulation more user friendly.
- Junior honours lab project – Asteroid Light Curves - Using a free standing telescope, fitted with a motorised tracking mount, a number of nights were spent at the observatory gathering data from asteroids in order to build up a light curve. Aside from this practical experience, MATLAB code was written in order to process the raw data taken, account for systematic errors and create the light curve. In order to efficiently collect data it was important to work as a team to maximise our output.

Kirkwall Grammar School **2003 - 2009**

- Wide range of subjects studied, with Physics (A grade), Music (A grade) and Art (A grade) being carried through to Advanced Higher level.
- Highers taken in the subjects above as well as English (B grade) and Mathematics (A grade).

Work Experience

University of Glasgow summer placement **Summer 2012**

- Six week placement with the University of Glasgow Astronomy department.
- Worked on teaching development of second year curriculum, writing model answers for tutorial questions, as well as writing questions corresponding to each lecture course, covering the basics of each lecture in turn.
- Also worked to develop and improve first year lab experiment on the Hertzsprung-Russell diagram, re-writing the lab script and model answer accordingly.

Waiter/Barista at CafeLolz@21 **Summer 2011**

- Working with other members of staff to provide the best service possible to the customer required good teamwork, especially in a busy cafe like this one.
- As a more senior employee, the ability to delegate and knowledge of what needed doing helped develop leadership skills.

Waiter/Barista at the Stadium Cafe Bar **Summer 2009/10**

- As well as working with a coffee machine, jobs included waiting on tables, working with the public, money handling and keeping a clean working environment.
- Cafe environment can be high stress when busy, so keeping calm and level headed was an essential skill to master quickly.
- My time at the Stadium was quite a learning curve, as it was my first job of this kind. However, over my two summers in employment there I learnt a lot and made some strong bonds with colleagues, many of which carried over to my job at CafeLolz@21.

Computer skills

Over the years I have gained a great deal of experience in computer programming, specifically in IDL and MATLAB languages, as well as the typesetting language LaTeX. I am also familiar with MacOS, Windows and Ubuntu/Linux-type operating systems. Beyond the normal user interface, I can also comfortably navigate Unix based OS command lines, specifically the MacOS and Ubuntu Terminal, and use bash, cshell and text editors such as Vim.

Interests and hobbies

Outside of physics and astronomy, I am a keen musician, playing a number of instruments. I have played in various bands over the years, playing gigs and practicing regularly with bandmates. Playing live has helped a great deal with self confidence, and playing in a band requires teamwork and determination.

I have recently taken up the hobby of all-grain homebrewing. The process of making beer is fascinating to me, and the satisfaction of an enjoyable finished product is extremely rewarding, especially when I get to share the product with others. Learning about the process is what piqued my interest in brewing, and refining recipes, and finding new recipes is captivating.

I also have an interest in art, and I find drawing and sketching very enjoyable.