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Publications: http://www.astro.gla.ac.uk/?page_id=865&bbpname=Jeffrey

Google citations: <http://scholar.google.com/citations?user=gJ5nSUAAAAAJ&hl=en>

Research positions

- **Research assistant, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, 1st October 2014 - 30th September 2017, PIs: Professor Lyndsay Fletcher and Dr Nicolas Labrosse.
Solar flare EUV line spectroscopy and the properties and dynamics of a hot, flaring atmosphere - I am currently studying accelerated non-thermal ion motions from non-Gaussian solar flare spectral lines.
- **Research assistant, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, 1st April 2014 - 30th September 2014, PI: Dr. Eduard Kontar.
X-rays and the diagnostics of solar flare accelerated electrons.

Education

- **Ph.D Solar Physics, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, October 2010 - March 2014, Supervisor: Dr. Eduard Kontar.
Thesis title: *Spatial, spectral and polarization properties of solar flare X-ray sources.*
Highlights: Studying spatially resolved polarization across X-ray sources due to photospheric albedo, for the first time in solar physics. Using RHESSI observations to study the changing spatial properties of coronal X-ray sources with time during a number of chosen flares.
- **M.Sci. Joint Physics and Astronomy (1st Class), University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, 2005-2010.
Masters Project: *The position and sizes of solar flare X-ray sources.* Supervisor: Dr. Eduard Kontar.

Research visits and other experience

- **Visiting Scientist, NASA Goddard Space Flight Center** Greenbelt, Maryland, USA, August 2011 - December 2011, Supervisor: Dr. Brian Dennis.
Project: *RHESSI and associated data analysis techniques.* Science and Technology Facilities Council Long Term Attachment (STFC LTA) to work with experienced Ramaty High Energy Solar Spectroscopic Imager (RHESSI) team members. The visit allowed me to become more familiar with the spatial and spectral data analysis techniques required to study X-ray sources with RHESSI, in particular coronal X-ray sources.
- **Undergraduate summer projects, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, Supervisor: Dr. Eduard Kontar.
Summer 2009: *Creating Monte Carlo simulations to study the X-ray albedo effect*
Summer 2008: *Analysing X-ray source sizes with RHESSI and Visibility Forward Fitting.*

Teaching Experience

- **Lecturer, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, Astronomy 2 *Stars and their spectra - 10 lectures*, 2015-.
- **Supervisor, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, Astronomy 2 small group supervisor, 2014-.
- **Honours Project Supervisor, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, **Project: *Solar flare non-thermal ion motion***, 2015-2016.
- **Laboratory Demonstrator, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, January 2012 - May 2013. Duties include guiding students through astronomy laboratory sessions and marking lab records.
- **Summer student supervision, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, August 2013. I assisted my supervisor at this time with his summer student while he was absent, teaching the student Interactive Data Language (IDL), SolarSoft (SSW) and solar flare data analysis with RHESSI.
- **Undergraduate Teacher, University of Glasgow**, School of Physics and Astronomy, Glasgow, UK, October 2010 - May 2011. Duties include assisting students during tutorials and marking assignments.

Conference organisation

- **CESRA summer school** (August 2015), **STFC Introductory Solar Systems Plasma Summer School** (September 2015), **RHESSI 11** (April 2011) workshop and the **Franco-British Alliance meetings** (January 2011, June 2012), University of Glasgow, Glasgow, UK.
Duties included room and food organisation, making welcome packs and badges and helping to organise financial support for students.

Outreach Activities and Public Science Articles

- **North West Astronomy Festival 2013, Women Rock Science**, Runcorn, Cheshire, UK, October 2013. I was part of a interactive display showcasing female astronomers from all over the world, which is being used to encourage young people into astronomy.
- **IOP Women in Physics 2013**, Hutchesons' Grammar School, Glasgow, UK, May 2013
I was part of a team giving an interactive astronomy presentation demonstrating the use of spectroscopy and talking about our career and paths in astronomy.
- **IOP Women in Physics 2015**, Vale of Leven Academy, Dunbartonshire, UK, January 2015
I gave a presentation to a number of girls (13-14 years) talking about my own career path and highlighting how important physics is to society and their future careers. I organised six workshops talking about how astronomers learn about stars from their light.
- **RHESSI science nuggets**
<http://sprg.ssl.berkeley.edu/tohban/wiki/index.php/RHESSI.Science.Nuggets>
Nugget 264: *Non-thermal electron power and X-ray spectra* E. Kontar et al.
Nugget 198: *Three-phase life leads to corpulent X-ray loops* N. Jeffrey & E. Kontar
Nugget 165: *Modelling spatially resolved X-ray polarization* N. Jeffrey & E. Kontar
Nugget 130: *Albedo and the modification of RHESSI results* N. Jeffrey & E. Kontar

Prizes, Professional Memberships and Peer Review

- **Postgraduate Prizes:** Thomson Postgraduate Prize 2013 (awarded for 2nd year Ph.D report (£1000))
- **Conference Poster Prizes:** UK Solar Physics (UKSP) (runner-up), Scottish Universities Physics Alliance (SUPA) Cormack (runner up).
- **Undergraduate Prizes:** Archibald McAulay Memorial Prize for Physics, Thomson Experimental Prize for Physics, Tannahill Bequest Astronomy Prize (2011), Astronomy Prize (2010, 2009, 2008), Ruth E. Hay Memorial Prize for Physics (2008), Ewing Prize for Physics, Dougall Prize for Mathematics (2007).
- **Fellow of the Royal Astronomical Society (RAS)**
- **I have peer reviewed one manuscript for The Astrophysical Journal.**

Grants, Awards and Scholarships

- **Scottish Universities Physics Alliance (SUPA) Prize Studentship** extra ~£1000 per year awarded with Science and Technology Facilities Council (STFC) Ph.D funding.
- **Travel Scholarships**
 - COSPAR travel award to attend the meeting in Moscow, August 2014 (900 euros).
 - Solar Physics Division (SPD) of the American Astronomical Society travel studentship (2013) to attend and present at the 44th SPD meeting in Bozeman, Montana, USA, (\$1300).
 - Solar in Sonoma travel award (2012) to attend and present at “Tracing the connections in solar eruptive events” in Petaluma, California, USA, (\$500).

Relevant Skills

- **Programming languages:** Interactive Data Language (IDL) and SolarSoft tools (Expert), Fortran (Intermediate), Python (basic), Matlab (intermediate)
- **Operating Systems/Software:** Competent using Linux, Windows and Mac OSX. Extensive use of LaTeX.

Invited talks and tutorials

1. **RadioSun-3 Workshop and Summer School**
Pulkovo Observatory, Saint-Petersburg, Russia, *RHESSI tutorial* *September 2014*
2. **14th Annual International Astrophysics Conference**
Tampa, Florida, USA, *Oral presentation* *April 2015*

Conferences, Workshops and Summer schools

1. **Advanced Solar Physics Summer School**, Preston, UK, *Oral presentation* *August 2010*
2. **Community Of European Solar Radio Astronomers Radio Summer School**, (CESRA), Nancay, France, *Oral presentation* *September 2010*
3. **Franco-British Alliance meetings**, Glasgow, UK, *Oral presentation* *January 2011, June 2012*
4. **RHESSI 11**, Glasgow, UK, *Oral presentation* *April 2011*
5. **National Astronomy Meeting (NAM) 11**, Llandudno, UK, *Oral presentation* *April 2011*
6. **NASA Goddard Space Flight Center**, Greenbelt, Maryland, USA, *Oral presentation* *September 2011*
7. **National Astronomy Meeting (NAM) 12**, Manchester, UK, *Poster Presentation, runner-up UKSP poster prize* *March 2012*

8. Royal Astronomical Society (RAS) Specialist meeting,
London, UK, *Oral presentation* *October 2012*
9. Scottish Universities Physics Alliance (SUPA) Cormack meeting,
Edinburgh, UK, *Poster Presentation, runner-up poster prize* *November 2012*
10. Solar in Sonoma “Tracing the connections in solar eruptive events”,
Petaluma, California, USA, *Oral presentation* *November 2012*
11. American Geophysical Union (AGU) Fall meeting,
San Francisco, California, USA, *Poster presentation* *December 2012*
12. National Astronomy Meeting (NAM) 13, St. Andrews, UK, *Oral presentation* *July 2013*
13. American Astronomical Society (AAS) Solar Physics Division (SPD) 44th meeting
Bozeman, Montana, USA, *Oral presentation* *July 2013*
14. RHESSI 13, Windisch, Switzerland, *Oral presentation* *April 2014*
15. National Astronomy Meeting (NAM) 14, Portsmouth, UK, *Oral presentation* *June 2014*
15. RadioSun-3 Workshop and Summer School,
Pulkovo Observatory, Saint-Petersburg, Russia, *Oral presentation* *September 2014*
16. National Astronomy Meeting (NAM) 15 , Llandudno, UK, *Oral presentation* *July 2015*
17. Hinode 9, Belfast, UK, *Oral & poster presentations* *September 2015*

Publications list

Refereed (click red link to read):

- **First evidence of non-Gaussian solar flare EUV spectral line profiles and accelerated non-thermal ion motion.**
N. L. S. Jeffrey, L. Fletcher & N. Labrosse
Astronomy & Astrophysics, submitted, 2015.
- **High-temperature differential emission measure and altitude variations in the temperature and density of solar flare coronal X-ray sources.**
N. L. S. Jeffrey, E. P. Kontar & B. R. Dennis
Astronomy & Astrophysics, 584, [A89](#), 2015
- **The collisional relaxation of electrons in hot flaring plasma and inferring the properties of solar flare accelerated electrons from X-ray observations.**
N. L. S. Jeffrey, E. P. Kontar, A. G. Emslie & N. H. Bian
Journal of Physics: Conference Series, 642, [1](#), 2015
- **Collisional Relaxation of Electrons in a Warm Plasma and Accelerated Nonthermal Electron Spectra in Solar Flares**
E. P. Kontar, N. L. S. Jeffrey, A. G. Emslie & N. H. Bian
The Astrophysical Journal, 809, [35](#), 2015
- **On the variation of solar flare coronal X-ray source sizes with energy**
N. L. S. Jeffrey, E. P. Kontar, N. H. Bian & A. G. Emslie
The Astrophysical Journal, 787, [86](#), 2014
- **Temporal variation of X-ray solar flare loops: length, corpulence, position, temperature, plasma pressure and spectra**
N. L. S. Jeffrey & E. P. Kontar
The Astrophysical Journal, 766, [75](#), 2013

- **Spatially resolved hard X-ray polarization in solar flares: effects of Compton scattering and bremsstrahlung**
N. L. S. Jeffrey & E. P. Kontar
Astronomy & Astrophysics, 536, **A93**, 2011
- **High-resolution Imaging of Solar Flare Ribbons and Its Implication on the Thick-target Beam Model**
S. Krucker, H. S. Hudson, N. L. S. Jeffrey et al.
The Astrophysical Journal, 739, **96**, 2011
- **Positions and sizes of X-ray solar flare sources**
E. P. Kontar & N. L. S. Jeffrey
Astronomy & Astrophysics, 513, **L2**, 2010
- **The Sub-arcsecond Hard X-ray Structure of Loop Footpoints in a Solar Flare**
E. P. Kontar, I. G. Hannah, N. L. S. Jeffrey & M. Battaglia
The Astrophysical Journal, 7317, **250**, 2010

Conference proceedings:

- **Collisional Diffusion and Thick-Target Energy Losses in Solar Flares – Death to the “Low-Energy Cutoff”**
A. G. Emslie, N. H. Bian, N. L. S. Jeffrey & E. P. Kontar
Joint American Astronomical Society/American Geophysical Union Triennial Earth-Sun Summit, meeting 1, 302.04
- **The variation of solar flare coronal X-ray source lengths with energy**
Natasha Jeffrey, Eduard Kontar, A. Gordon Emslie & Brian Dennis
40th COSPAR Scientific Assembly. Held 2-10 August 2014, in Moscow, Russia, Abstract D2.5-74-14.
- **The detailed height, temperature and density structure of solar flare acceleration regions**
Natasha Jeffrey, Eduard Kontar & Brian Dennis
40th COSPAR Scientific Assembly. Held 2-10 August 2014, in Moscow, Russia, Abstract D2.5-78-14.
- **Temporal Variations of X-Ray Solar Flare Loops: Length, Corpulence, Position, Temperature, Plasma Pressure, and Spectra**
N. Jeffrey & E. Kontar
American Astronomical Society, AAS Meeting, SPD meeting 44, 201.01, 2013
- **The Energy-Dependent Growth Of RHESSI HXR Loops As A Possible Signature Of Turbulent Acceleration**
Iain Hannah, E. P. Kontar & N. L. S. Jeffrey
American Astronomical Society, AAS Meeting 220, 204.04, 2012
- **Hard X-Ray Structure of Loop Footpoints in a Solar Limb Flare**
Eduard Kontar, N. Jeffrey, I. Hannah & M. Battaglia
American Astronomical Society, AAS Meeting 216, 404.30; Bulletin of the American Astronomical Society, Vol. 41, p.904, 2010
- **Sizes and position of on-disk X-ray solar flares sources: effect of X-ray albedo**
Eduard Kontar & N. Jeffrey
38th COSPAR Scientific Assembly. Held 18-15 July 2010, in Bremen, Germany, p.3