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Publications (ORCID)
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Research domain: solar physics, heliophysics, plasma astrophysics, high energy astrophysics.

I am experienced with the modelling of solar flare electrons and X-rays at the Sun, in collisional plasma conditions. I am also adept in the determination of flare-accelerated electron properties using X-ray diagnostics, and diagnosing coronal and lower atmosphere plasma properties and turbulence using X-ray and ultraviolet (UV) observations.

Employment & Academic Qualifications

- Oct 14 – **Research assistant, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
PI's: Prof. Lyndsay Fletcher & Dr Nicolas Labrosse, **Solar flare EUV line spectroscopy**.
- Apr 14 – Oct 14 **Research assistant, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
PI: Dr Eduard Kontar, **X-ray diagnostics of solar flare accelerated electrons**.
- Oct 10 – Dec 14 **Ph.D Solar Physics, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
Spatial, spectral and polarization properties of solar flare X-ray sources. Awarded: 5-Dec-2014.
Supervisor: Dr Eduard Kontar. *Highlights:* Studying spatially resolved polarization across X-ray sources due to photospheric albedo, for the first time in solar physics.
- Oct 05 – Jun 10 **M.Sci. Joint Physics & Astronomy (1st Class degree), University of Glasgow**, Glasgow, UK.

Invited talks, tutorials & participation

- Aug 18 **Invited talk, the Committee on Space Research (COSPAR)**, Pasadena, CA, USA.
- Feb 18 – **Invited mission scientist**, The SolAR Polarimeter for Hard X-Rays (Sapphire; proposed Cubesat mission).
- Apr 18 **Invited talk, European Geophysical Union (EGU; Early-career award talk)**, Vienna, Austria.
- Jun 17 **Invited plenary & workshop group leader, RHESSI XVI workshop**, Boulder, CO, USA.
- Jun 17 **Seminar, Columbia University, Astrophysics Laboratory**, New York, NY, USA.
- Apr 17 **Seminar, University College London (UCL) MSSL**, Dorking, Surrey, UK.
- May 16 **Invited to participate, POLAR Instrument In-space Calibration/Solar Flare Detection workshop**, Beijing, China. POLAR is a new X-ray polarimeter onboard the Chinese Space Station.
- Aug 15 **Science proposal advisor and working group member, FOXSI mission**.
Proposed NASA space-based instrument that will directly image solar flare emitted X-rays.
- Apr 15 **Invited talk, 14th Annual International Astrophysics Conference**, Tampa, Florida, USA.
- Aug 14 **Invited tutorial, RadioSun-3 Workshop/Summer School**, Pulkovo Observatory, Russia.
- Aug 11 – Dec 11 **Visiting Scientist**, NASA Goddard Space Flight Center, Greenbelt, Maryland, USA.

Research & Travel Grants

- Aug 18 **COSPAR travel award**, COSPAR, Pasadena, CA, USA (700 euros).
- Jul 18 **International Space Science Institute (ISSI) project "Solar flare acceleration signatures and their connection to solar energetic particles" (Team leader)**. ISSI cover the costs of two meetings for 14 team members in Bern, Switzerland, and team leader transport costs.
- Jun 17 **Principal Early Careers Mobility Fund**. Grant to travel and work at Columbia University, New York, for one month and build collaboration between Glasgow and Columbia (£3350).
- Jul – Sep 16 **Royal Astronomical Society (RAS) Summer Undergraduate Research Project. Project:** Non-thermal electrons and ions in solar flares. **Student: Dale Weigt, (£1200).**
- Oct 10 – Mar 14 **Scottish Universities Physics Alliance (SUPA) Prize Studentship**. Extra ~£1000 per year awarded with Science and Technology Facilities Council (STFC) Ph.D. funding.
- Aug 14 **COSPAR travel award**, COSPAR, Moscow, Russia, (900 euros).
- Jul 13 **Solar Physics Division (SPD) of the American Astronomical Society travel studentship** to attend and present at the 44th SPD meeting in Bozeman, Montana, USA, (\$1300).

Research Prizes

- Apr 18 **European Geophysical Union (EGU) Solar-Terrestrial Early Career Researcher Prize.**
 Jul 17 **European Physical Society (EPS) Solar Physics Division (ESPD) Early Career Researcher Prize.**
 Jul 16 **European Physical Society (EPS) Plasma Physics Division PhD Research Award.**

University Teaching

- Jan 16 - **Lecturer, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
 Astronomy 2 *Stars and their spectra* - 10 lectures.
 Oct 14 - **Supervisor, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK,
 Astronomy 2 small group supervisor.
 Sep 15 – Mar 16 **Honours Project Supervisor, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
Project: *Solar flare non-thermal ion motion.*
 Oct 10 – May 13 **Laboratory Demonstrator, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
 Duties: guiding students through astronomy laboratory sessions.
 Aug 13/Aug 15 **Summer student supervision, University of Glasgow**, School of Physics & Astronomy, Glasgow, UK.
 Duties: teaching each student how to use Interactive Data Language (IDL) and SolarSoft (SSW) for solar flare X-ray and ultraviolet data analysis.

Conference & Workshop organisation

- Nov 18- **Particle acceleration in the Universe from the Sun to extragalactic sources**, Calabria, Italy.
 Member of the scientific organising committee (SOC) for the Sun & heliosphere section.
 Duties: organising sessions and speakers, and chairing discussions during the workshop.
 Jun 16 - **National Astronomy Meeting (NAM) session organiser**, Nottingham, UK.
Particle acceleration and transport from the Sun to the outer heliosphere. Two 1.5 hours sessions.
 Duties: chairing the session, deciding number of contributed talks and invited speakers.
 Aug 15 - **Community Of European Solar Radio Astronomers (CESRA) Radio Summer School**,
 University of Glasgow, School of Physics & Astronomy, Glasgow, UK.
 Duties: room/food organisation, making welcome packs/badges and organising financial support.
 Oct 14 - **STFC Introductory Solar Systems Plasma Summer School**,
 University of Glasgow, School of Physics & Astronomy, Glasgow, UK.
 Duties: making welcome packs/badges.

Public Outreach Activities

- Apr 18 **Inverclyde Sky Watchers**, Gourock, UK. Oral presentation: *Our Sun and Solar Flares.*
 Mar 17 **Astronomers of the Future Club**, Troon, UK. Oral presentation: *The X-ray Sun.*
 Mar 16 **Airdrie Astronomical Association**, Airdrie, UK. Oral presentation: *The X-ray Sun*
 Feb 16 **IOP Women in Physics 2016**, Vale of Leven Academy, Dunbartonshire, UK.
 I built an experiment and organised seven workshops demonstrating how astronomers detect exoplanets.
 Sep 15 **European Researchers' night "Explorathon"**, Glasgow Science Centre, Glasgow, UK.
 Large event attended by over 1000 members of the public. I was part of a group that presented the latest solar images. We also explained why astrophysicists study different colours/wavelengths of light.
 Jan 15 **IOP Women in Physics 2015**, Vale of Leven Academy, Dunbartonshire, UK.
 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.
 Oct 13 **North West Astronomy Festival 2013, Women Rock Science**, Runcorn, Cheshire, UK.
 I was part of a interactive display showcasing female astronomers from all over the world.
 May 13 **IOP Women in Physics 2013**, Hutchesons' Grammer School, Glasgow, UK.
 I was part of a team giving an interactive astronomy presentation demonstrating the use of spectroscopy.

Science nuggets - small, easy to read science articles

- EIS Nugget Jan. 17:** *Measuring solar flare non-Gaussian velocities using EIS spectroscopy*
RHESSI Nugget 264: *Non-thermal electron power and X-ray spectra*
RHESSI Nugget 198: *Three-phase life leads to corpulent X-ray loops*
RHESSI Nugget 165: *Modelling spatially resolved X-ray polarization*
RHESSI Nugget 130: *Albedo and the modification of RHESSI results*

N. Jeffrey et al.
 E. Kontar et al.
N. Jeffrey & E. Kontar
N. Jeffrey & E. Kontar
N. Jeffrey & E. Kontar

Other prizes, awards and relevant information

- Fellow of the Royal Astronomical Society (RAS).
- Reviewer for *Astrophysical Journal*, *Astronomy & Astrophysics* and *Nature* journals.
- Reviewer for the NASA Heliophysics Guest Investigator Open (HGIO) Panel.
- An elected member of the UK Solar Physics (UKSP) council, As a postdoctoral member, I represent early career solar physicists in the UK, and I use social media to provide the UKSP community with the latest solar physics news.

Contributed talks and posters

I have given ~30 contributed oral and poster presentations over the last eight years both nationally and internationally (as both a postgraduate and a research assistant) including:

1. **The Committee on Space Research (COSPAR)**, Pasadena, CA, USA, **Oral presentation**, Jul 2018
2. **Scottish Universities Physics Alliance (SUPA)**, Edinburgh, UK, **Oral presentation**, Jun 2018
3. **European Geophysical Union Meeting (EGU)**, Vienna, Austria, **Oral & Poster presentations**, Apr 2018
4. **European Week of Astronomy & Space Science (EWASS)**, Liverpool, UK, **Oral presentation**, Apr 2018
5. **RHESSI 16**, Boulder, CO, USA, **Oral presentation**, June 2017
6. **HINODE-11/IRIS-8**, Seattle, WA, USA, **Oral presentation**, June 2017
7. **16th Annual International Astrophysics Conference**, Santa Fe, NM, USA, **Oral presentation**, March 2017
8. **European Physical Society Plasma Physics**, Leuven, Belgium, **Oral presentation**, July 2016
9. **National Astronomy Meeting (NAM) 16**, Nottingham, UK, **Oral & Poster presentation**, June 2016
10. **National Astronomical Observatories, Chinese Academy of Sciences**, Beijing, China, **Oral presentation**, May 2016
11. **Workshop on POLAR calibration in space**, Beijing, China, **Oral presentation**, May 2016
12. **Hinode 9**, Belfast, UK, **Oral & poster presentations**, September 2015
13. **National Astronomy Meeting (NAM) 15**, Llandudno, UK, **Oral presentation**, July 2015
14. **RadioSun-3 Workshop and Summer School**, Pulkovo Observatory, Russia, **Oral presentation**, September 2014
15. **National Astronomy Meeting (NAM) 14**, Portsmouth, UK, **Oral presentation**, June 2014
16. **RHESSI 13**, Windisch, Switzerland, **Oral presentation**, April 2014, Bozeman, MT, USA, **Oral presentation**, July 2013
17. **National Astronomy Meeting (NAM) 13**, St. Andrews, UK, **Oral presentation**, July 2013
18. **American Geophysical Union (AGU) Fall meeting**, San Francisco, CA, USA, **Poster presentation**, December 2012
19. **Solar in Sonoma**, Petaluma, CA, USA, **Oral presentation**, November 2012
20. **Scottish Universities Physics Alliance (SUPA)**, Edinburgh, UK, **Poster Presentation**, November 2012
21. **Royal Astronomical Society (RAS) Specialist meeting**, London, UK, **Oral presentation**, October 2012
22. **National Astronomy Meeting (NAM) 12**, Manchester, UK, **Poster Presentation**, March 2012
23. **NASA Goddard Space Flight Center**, Greenbelt, Maryland, USA, **Oral presentation**, September 2011
24. **National Astronomy Meeting (NAM) 11**, Llandudno, UK, **Oral presentation**, April 2011
25. **RHESSI 11**, Glasgow, UK, **Oral presentation**, April 2011
26. **Franco-British Alliance meetings**, Glasgow, UK, **Oral presentation**, January 2011, June 2012
27. **CESRA Summer School**, Nancy, France, **Oral presentation**, September 2010
28. **Advanced Solar Physics Summer School**, Preston, UK, **Oral presentation**, August 2010

Publications (refereed)

Publication record: Seventeen refereed publications since 2010 with 222 citations and h-index of 7. Most cited paper has 70 citations. Most cited first author paper has 16 citations ([NASA ADS](#), [Google Scholar](#), [ORCID](#), [Enlighten](#)).

- N. L. S. Jeffrey**, M. Hahn, D. W. Savin, and L. Fletcher. *Spectroscopic Measurements of the Ion Velocity Distribution at the Base of the Fast Solar Wind*. *ApJ*, 855:L13, March 2018. DOI: [10.3847/2041-8213/aab08c](#).
- E. P. Kontar, S. Yu, A. A. Kuznetsov, A. G. Emslie, B. Alcock, **N. L. S. Jeffrey**, V. N. Melnik, N. H. Bian, and P. Subramanian. *Imaging spectroscopy of solar radio burst fine structures*. *Nature Communications*, 8:1515, November 2017b. DOI: [10.1038/s41467-017-01307-8](#).
- J. Wang, P. J. A. Simões, **N. L. S. Jeffrey**, L. Fletcher, P. J. Wright, and I. G. Hannah. *Observations of Reconnection Flows in a Flare on the Solar Disk*. *ApJ*, 847:L1, September 2017. DOI: [10.3847/2041-8213/aa8904](#).
- D. Casadei, **N. L. S. Jeffrey**, and E. P. Kontar. *Measuring X-ray anisotropy in solar flares. Prospective stereoscopic capabilities of STIX and MiSolFA*. *A&A*, 606:A2, September 2017. DOI: [10.1051/0004-6361/201730629](#).
- E. P. Kontar, J. E. Perez, L. K. Harra, A. A. Kuznetsov, A. G. Emslie, **N. L. S. Jeffrey**, N. H. Bian, and B. R. Dennis. *Turbulent Kinetic Energy in the Energy Balance of a Solar Flare*. *Physical Review Letters*, 118(15):155101, April 2017a. DOI: [10.1103/PhysRevLett.118.155101](#).
- N. L. S. Jeffrey**, L. Fletcher, and N. Labrosse. *Non-Gaussian Velocity Distributions in Solar Flares from Extreme Ultraviolet Lines: A Possible Diagnostic of Ion Acceleration*. *ApJ*, 836:35, February 2017. DOI: [10.3847/1538-4357/836/1/35](#).
- S. Li, Y. H. Yan, W. Wang, Z. J. Chen, D. H. Liu, F. S. Zhang, and **N. Jeffrey**. *A New Impedance Matching Method for an Ultra-Wide Band and Dual Circularly Polarised Feed*. *PASA*, 33:e061, December 2016. DOI: [10.1017/pasa.2016.51](#).
- N. L. S. Jeffrey**, L. Fletcher, and N. Labrosse. *First evidence of non-Gaussian solar flare EUV spectral line profiles and accelerated non-thermal ion motion*. *A&A*, 590:A99, May 2016. DOI: [10.1051/0004-6361/201527986](#).
- N. L. S. Jeffrey**, E. P. Kontar, and B. R. Dennis. *High-temperature differential emission measure and altitude variations in the temperature and density of solar flare coronal X-ray sources*. *A&A*, 584:A89, December 2015a. DOI: [10.1051/0004-6361/201526665](#).
- N. L. S. Jeffrey**, E. P. Kontar, A. G. Emslie, and N. H. Bian. *The collisional relaxation of electrons in hot flaring plasma and inferring the properties of solar flare accelerated electrons from X-ray observations*. In *Journal of Physics Conference Series*, volume 642 of *Journal of Physics Conference Series*, page 012013, September 2015b. DOI: [10.1088/1742-6596/642/1/012013](#).
- E. P. Kontar, **N. L. S. Jeffrey**, A. G. Emslie, and N. H. Bian. *Collisional Relaxation of Electrons in a Warm Plasma and Accelerated Nonthermal Electron Spectra in Solar Flares*. *ApJ*, 809:35, August 2015. DOI: [10.1088/0004-637X/809/1/35](#).
- N. L. S. Jeffrey**, E. P. Kontar, N. H. Bian, and A. G. Emslie. *On the Variation of Solar Flare Coronal X-Ray Source Sizes with Energy*. *ApJ*, 787:86, May 2014. DOI: [10.1088/0004-637X/787/1/86](#).
- N. L. S. Jeffrey** and E. P. Kontar. *Temporal Variations of X-Ray Solar Flare Loops: Length, Corpulence, Position, Temperature, Plasma Pressure, and Spectra*. *ApJ*, 766:75, April 2013. DOI: [10.1088/0004-637X/766/2/75](#).
- N. L. S. Jeffrey** and E. P. Kontar. *Spatially resolved hard X-ray polarization in solar flares: effects of Compton scattering and bremsstrahlung*. *A&A*, 536:A93, December 2011. DOI: [10.1051/0004-6361/201117987](#).
- S. Krucker, H. S. Hudson, **N. L. S. Jeffrey**, M. Battaglia, E. P. Kontar, A. O. Benz, A. Csillaghy, and R. P. Lin. *High-resolution Imaging of Solar Flare Ribbons and Its Implication on the Thick-target Beam Model*. *ApJ*, 739:96, October 2011. DOI: [10.1088/0004-637X/739/2/96](#).
- E. P. Kontar and **N. L. S. Jeffrey**. *Positions and sizes of X-ray solar flare sources*. *A&A*, 513:L2, April 2010. DOI: [10.1051/0004-6361/201014066](#).
- E. P. Kontar, I. G. Hannah, **N. L. S. Jeffrey**, and M. Battaglia. *The Sub-arcsecond Hard X-ray Structure of Loop Footpoints in a Solar Flare*. *ApJ*, 717:250–256, July 2010. DOI: [10.1088/0004-637X/717/1/250](#).