Dr. Hannah Schunker

Curriculum Vitae

Conferral of Academic Degrees

22.03.2007 **Doctor of Philosophy (Astrophysics)**, *Monash University*, Australia

2002 **Bachelor of Science Honours (Physics)**, *Adelaide University*, Australia, First Class Honours A

2001 **Bachelor of Science (double major in Experimental Physics and Theoretical Physics)**, *Adelaide University*, Australia

Current Position

2023-2027 **ARC Future Fellow**, *University of Newcastle (Australia)*, Australian Research Council Fellowship

Previous Positions

2024- **Senior Lecturer**, *University of Newcastle (Australia)*, Physics Discipline

2020-2022 **Lecturer**, *University of Newcastle (Australia)*, Physics Discipline

2019-2020 **Staff scientist (tenured)**, *Max Planck Institute for Solar System Research, Germany*, Solar and Stellar Interiors department

2012-2019 **Project scientist**, *Max Planck Institute for Solar System Research, Germany*, Solar and Stellar Interiors department

2006-2012 **Post-doctoral Research Fellow**, *Max Planck Institute for Solar System Research, Germany*, Junior Research Group

Other Scientific Roles

2024-2027 **Chief Investigator 'Remote sensing of coronal mass ejection magnetic fields for space weather forecasting'**, *U.S. Department of Defense - Air Force Office of Scientific Research*

2023-2027 **Chief Investigator 'Closing the Solar Cycle'**, *Australian Research Council, Future Fellowship*

2024-2026 **Co-Chief Investigator 'Ensemble modelling of space weather drivers'**, *Australian Research Council, Discovery Project*

2022-2023 **Chief Investigator 'Preparations for PLATO Asteroseismology'**, *Universities Australia / DAAD*

2016-2020 **Work Package Leader**, *European Space Agency's Planetary Transits and Oscillations of Stars (ESA/PLATO) Data Centre*, (MPS)

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2012-2016 **Co-Investigator**, *project A18 'Asteroseismology and dynamos in solar-like stars'*, Collaborative Research Centre 963, (MPS)

2010-2020 **Project Planning**, *Planetary Transits and Oscillations of Stars*, Project Office (MPS)

2009-2016 **Lead IT Specialist**, *German Data Centre for the Solar Dynamics Observatory*, DLR/German Space Agency project (MPS)

2006-2009 **Data and code management**, *Local Helioseismology Network Activity, European Helio- and Asteroseismology Network (HELAS)*, European Research Council FP6 (MPS)

Fellowships and Grants

2024 **U.S. Department of Defense - Air Force Office of Scientific Research** Remote sensing of coronal mass ejection magnetic fields for space weather forecasting *$763,962*

2023 **Astronomy Data & Computing Services**, 1040 kSU (valued at 4 cents per Service Unit) awarded to compute MURaM simulations on the GADI supercomputer 'Effects of Solar Rotation on Convection and Active Region Evolution (part II)' *$41,600*

2023 **Scientific Committee on Solar-Terrestrial Physics/Predictability of Variable Solar-Terrestrial Coupling** (SCOSTEP/PRESTO) Database Award (USD$5000) *$7,200*

2022 **Future Fellowship**, Australian Research Council, 'Closing the Solar Cycle' (success rate 14%) *$800,000*

2022 **Discovery Project**, Australian Research Council, 'Ensemble modelling of space-weather drivers' (success rate 17%) *$500,000*

2022 **Astronomy Data & Computing Services**, 440 kSU (valued at 4 cents per Service Unit) awarded to compute MURaM simulations on the GADI supercomputer, 'Effects of Solar Rotation on Convection and Active Region Evolution' *$17,600*

2021 **Australia-Germany Joint Research Cooperation scheme**, Universities Australia, 'Preparations for PLATO Asteroseismology' *$22,000*

2021 **Women In Research Fellowship**, University of Newcastle *$30,000*

2020 **Faculty of Science Fellowship Accelerator Initiative**, University of Newcastle *$2758*

2012-2016 **European Research Council**, Collaborative Research Center 963 'Flow Instabilities and Turbulence' (168,400 EUR from total 1.32 million EUR) *$270,000*

Teaching Support

2023 PHYS2100 to modernise computer laboratories *$1,400*

2022 PHYS2100 to modernise computer laboratories *$6,000*

2021 PHYS3112 to modernise laboratories *$2,600*

Undergraduate Student Scholarships

2023 Australian Mathematical Sciences Institute Summer Research Scholarship, (student: Liam Barnes), University of Newcastle *$3000*

2021 College of Engineering, Science and Environment Summer Scholarship Program, (student: Aditya Joshi), University of Newcastle *$2000*

2020 Faculty of Science Vacation Scholarship (student: Camron Alley), University of Newcastle *$3000*

2020 Research and Innovation Division's Summer Research Internship Program, (student: Megan Ferguson), University of Newcastle *$2000*

Invited Presentations

I have delivered more than forty oral research presentations at international conferences, an outstanding number for someone in my field and at this career stage (15 years since PhD). This shows that my research consistently has an impact on, and is broadly relevant to, the astrophysics research community. This also illustrates my ability to communicate complex ideas clearly and effectively.

2024 **Invited speaker, 'Solar cycle variability: From understanding to making prediction'**, *14 - 18 Oct*, Nainital, India

2024 **European Physical Society Invited speaker, '17th European Solar Physics Meeting'**, *9 - 13 Sep*, Turin, Italy

2023 **Invited speaker, '9th Australian Exoplanet Workshop'**, *26 - 29 Sep*, University of Sydney, Australia

2022 **Keynote speaker, 'Modeling, observing and understanding flows and magnetic fields in the Earth's core and in the Sun' [DY2W03]**, *28 Nov - 2 Dec*, Isaac Newton Institute for Mathematical Sciences, Cambridge, U.K.

2022 **Keynote speaker, 20th Australian Space Research Conference**, *26-28 Sept*, Sydney, Australia

2022 **Solar and stellar dynamos: a new era**, *13-17 June*, International Space Science Institute workshop, Bern, Switzerland

2021 **Closing the solar cycle: Emerging Active Regions**, *online*, High Altitude Observatory, U.S.A.

2021 **Advances in Observations and Modelling of Solar Magnetism and Variability**, *1-4 March (online)*, Indian Institute of Astrophysics, India

2020 **Future Directions in Solar Stellar and Planetary Astrophysics**, *21-22 January*, New York University - Abu Dhabi, United Arab Emirates

2018 **SOHO-29: 22 years of GOLF and VIRGO: 2 sunspot cycles seen by seismology**, *27-29 November*, Nice, France

2018 **Colloquia 'Solving the Solar Dynamo Problem'**, *4 March*, Georgia State University, Atlanta, U.S.A.

2017 **Colloquia 'Solving the Solar Dynamo Problem'**, *9 March*, University of Hawaii, U.S.A.

2016 **Colloquia 'Solving the Solar Dynamo Problem'**, *28 April*, University of Birmingham, U.K.

2015 **Advances in the Seismology of the Sun and Stars**, *7-11 December*, Mumbai, India

2015 **International Astronomical Union, FM17 'Advances in Stellar Physics from Asteroseismology'**, *3-15 August*, Honolulu, U.S.A.

2015 **Sunspot formation: theory, simulations and observations**, *9-13 March*, Stockholm, Sweden

2013 **National Solar Observatory Workshop #27 'Fifty years of seismology of the Sun and Stars'**, *7-10 May*, Tucson, U.S.A.

2012 **GONG 2012 / LWS / SDO5 / SOHO 27 'Eclipse on the Coral Sea: cycle 24 ascending'**, *12-16 November*, Palm Cove, Australia

2012 **Bcool, second workshop, 'Cool magnetic stars'**, *15-19 October*, Göttingen, Germany

2012 **Opening Symposium CRC 963 'Astrophysical Flow Instabilities and Turbulence'**, *9-10 February*, Göttingen, Germany

2011 **LWS/SDO 3 'Solar Dynamics and Magnetism from the Interior to the Atmosphere'**, *Oct 31 - Nov 4*, Stanford University, U.S.A.

2010 **Fourth HELAS conference, 'Seismological challenges for stellar structure'**, *1-5 February*, Lanzarote, Spain

2009 **Third HELAS local helioseismology workshop 'The Subsurface Structure of Sunspots'**, *12-15 May*, Berlin, Germany

2009 **HELAS NA3 NA4 workshop, 'The acoustic solar cycle'**, *6-8 January*, Birmingham University, U.K.

2008 **International Space Science Institute workshop, 'Origins and Dynamics of Solar Magnetism'**, *21-25 January*, Bern, Switzerland

2007 **SOHO 19 / GONG2007 'Seismology of Magnetic Activity'**, *9-13 July*, Monash University, Australia

Major Scientific Collaborations

2023-2026 **Ensemble modelling of space weather drivers**, in collaboration with A/Prof. David Pontin (University of Newcastle), Prof. Michael Wheatland (University of Sydney), Dr. Mark Cheung (CSIRO)

2022-2023 **Preparations for PLATO Asteroseismology**, in collaboration with Prof. Laurent Gizon, MPS, Germany

2018- **Solar Orbiter / Polarimteric and Helioseismic Imager (SO/PHI) Science Team**, European Space Agency (MPS)

2016- **Planetary Transits and Oscillations of Stars (PLATO) Mission Consortium**, European Space Agency (MPS)

2020- **TESS Asteroseismic Science Consortium**, Working Group 2

2018-2021 **International Space Science Institute Team** , Probing the core of the Sun and the stars

2013-2020 **SpaceInn Consortium**, Exploitation of Space Data for Innovative Helio- and Asteroseismology

2012-2016 **ERC Collaborative Research Center 963**, Flow Instabilities and Turbulence

2011- **Kepler Asteroseismic Science Consortium**, Working Group 1 'Solar-like stars'

2011- **Solar Dynamics Observatory Science Center**, *collaborating scientist*, NASA

2006-2010 **European Helio- and Asteroseismology Network (HELAS)**,

Conference Organisation

2022 **Solar Physics and Space Weather Connections**, *Chair of the Scientific Organising Committee and Local Organising Committee*, `https://schunker.github.io/SPSW/`, in conjunction with the Australian Space Research Conference, University of Newcastle

Research Impact

I have published 40 peer-reviewed journal publications (Sci-Val). My h-index is 20 with 2319 total citations (NASA-ADS) and a field weighted citation count of 1.57 (Scival). My highest impact publications are not generally highly cited because they are 'seminal closure papers'. These are high-impact scientific papers that are highly influential because they resolve a question, definitively close a field, or identify a misinterpretation of previous analyses. While they are foundational, they may not receive many citations in later work because they effectively settle the debate or define boundaries, leaving little room for further research in that particular direction.

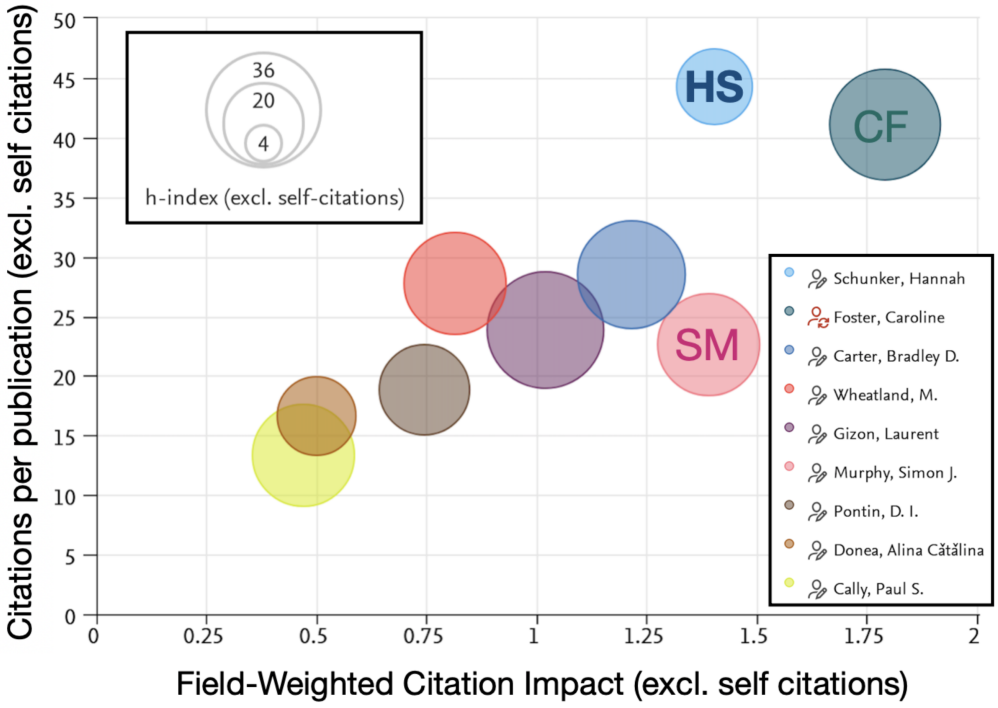

Figure 1: Field-weighted citation index vs citations per publication for myself (HS) compared to peers in a similar field and similar career levels (CF and SM), as well as established academics in similar fields at Australian universities (SciVal, as of Dec 2022).

Publication List

[1] H. Schunker, W. Roland-Batty, A. C. Birch, D. C. Braun, R. H. Cameron, and L. Gizon. A flux-independent increase in outflows prior to the emergence of active regions on the Sun. *MNRAS*, 533(1):225–243, September 2024.

[2] Heike Rauer, Conny Aerts, Juan Cabrera, Magali Deleuil, Anders Erikson, Laurent Gizon, Mariejo Goupil, Ana Heras, Jose Lorenzo-Alvarez, Filippo Marliani, Cesar Martin-Garcia, J. Miguel Mas-Hesse, Laurence O'Rourke, Hugh Osborn, Isabella Pagano, Giampaolo Piotto, Don Pollacco, Roberto Ragazzoni, Gavin Ramsay, Stéphane Udry, Thierry Appourchaux, Willy Benz, Alexis Brandeker, Manuel Güdel, Eduardo Janot-Pacheco, Petr Kabath, Hans Kjeldsen, Michiel Min, Nuno Santos, Alan Smith, Juan-Carlos Suarez, Stephanie C. Werner, Alessio Aboudan, Manuel Abreu, Lorena Acuña, Moritz Adams, Vardan Adibekyan, Laura Affer, François Agneray, Craig Agnor, Victor Aguirre Børsen-Koch, Saad Ahmed, Suzanne Aigrain, Ashraf Al-Bahlawan, M de los Angeles Alcacera Gil, Eleonora Alei, Silvia Alencar, Richard Alexander, Julia Alfonso-Garzón, Yann Alibert, Carlos Allende Prieto, Leonardo Almeida, Roi Alonso Sobrino, Giuseppe Altavilla, Christian Althaus, Luis Alonso Alvarez Trujillo, Anish Amarsi, Matthias Ammler von Eiff, Eduardo Amôres,

Laerte Andrade, Alexandros Antoniadis-Karnavas, Carlos António, Beatriz Aparicio del Moral, Matteo Appolloni, Claudio Arena, David Armstrong, Jose Aroca Aliaga, Martin Asplund, Jeroen Audenaert, Natalia Auricchio, Pedro Avelino, Ann Baeke, Kevin Baillié, Ana Balado, Andrea Balestra, Warrick Ball, Herve Ballans, Jerome Ballot, Caroline Barban, Gaële Barbary, Mauro Barbieri, Sebastià Barceló Forteza, Adrian Barker, Paul Barklem, Sydney Barnes, David Barrado Navascues, Oscar Barragan, Clément Baruteau, Sarbani Basu, Frederic Baudin, Philipp Baumeister, Daniel Bayliss, Michael Bazot, Paul G. Beck, Tim Bedding, Kevin Belkacem, Earl Bellinger, Serena Benatti, Othman Benomar, Diane Bérard, Maria Bergemann, Maria Bergomi, Pierre Bernardo, Katia Biazzo, Andrea Bignamini, Lionel Bigot, Nicolas Billot, Martin Binet, David Biondi, Federico Biondi, Aaron C. Birch, Bertram Bitsch, Paz Victoria Bluhm Ceballos, Attila Bódi, Zsófia Bognár, Isabelle Boisse, Emeline Bolmont, Alfio Bonanno, Mariangela Bonavita, Andrea Bonfanti, Xavier Bonfils, Rosaria Bonito, Aldo Stefano Bonomo, Anko Börner, Sudeshna Boro Saikia, Elisa Borreguero Martín, Francesco Borsa, Luca Borsato, Diego Bossini, Francois Bouchy, Gwenaël Boué, Rodrigo Boufleur, Patrick Boumier, Vincent Bourrier, Dominic M. Bowman, Enrico Bozzo, Louisa Bradley, John Bray, Alessandro Bressan, Sylvain Breton, Daniele Brienza, Ana Brito, Matteo Brogi, Beverly Brown, David Brown, Allan Sacha Brun, Giovanni Bruno, Michael Bruns, Lars A. Buchhave, Lisa Bugnet, Gaël Buldgen, Patrick Burgess, Andrea Busatta, Giorgia Busso, Derek Buzasi, José A. Caballero, Alexandre Cabral, Flavia Calderone, Robert Cameron, Andrew Cameron, Tiago Campante, Bruno Leonardo Canto Martins, Christophe Cara, Ludmila Carone, Josep Manel Carrasco, Luca Casagrande, Sarah L. Casewell, Santi Cassisi, Marco Castellani, Matthieu Castro, Claude Catala, Irene Catalán Fernández, Márcio Catelan, Heather Cegla, Chiara Cerruti, Virginie Cessa, Merieme Chadid, William Chaplin, Stephane Charpinet, Cristina Chiappini, Simone Chiarucci, Andrea Chiavassa, Simonetta Chinellato, Giovanni Chirulli, Jorgen Christensen-Dalsgaard, Ross Church, Antonio Claret, Cathie Clarke, Riccardo Claudi, Lionel Clermont, Hugo Coelho, Joao Coelho, Fabrizio Cogato, Josep Colomé, Mathieu Condamin, Simon Conseil, Thierry Corbard, Alexandre C. M. Correia, Enrico Corsaro, Rosario Cosentino, Jean Costes, Andrea Cottinelli, Giovanni Covone, Orlagh L. Creevey, Aurelien Crida, Szilard Csizmadia, Margarida Cunha, Patrick Curry, Jefferson da Costa, Francys da Silva, Shweta Dalal, Mario Damasso, Cilia Damiani, Francesco Damiani, Maria Liduina das Chagas, Melvyn Davies, Guy Davies, Ben Davies, Gary Davison, Leandro de Almeida, Francesca de Angeli, Susana Cristina Cabral de Barros, Izan de Castro Leão, Daniel Brito de Freitas, Marcia Cristina de Freitas, Domitilla De Martino, José Renan de Medeiros, Luiz Alberto de Paula, Jelle de Plaa, Joris De Ridder, Morgan Deal, Leen Decin, Hans Deeg, Scilla Degl'Innocenti, Sebastien Deheuvels, Carlos del Burgo, Fabio Del Sordo, Elisa Delgado-Mena, Olivier Demangeon, Tilmann Denk, Aliz Derekas, Silvano Desidera, Marc Dexet, Marcella Di Criscienzo, Anna Maria Di Giorgio, Maria Pia Di Mauro, Federico Jose Diaz Rial, José-Javier Díaz-García, Marco Dima, Giacomo Dinuzzi, Odysseas Dionatos, Elisa Distefano, Jose-Dias do Nascimento Jr. au2, Albert Domingo, Valentina D'Orazi, Caroline Dorn, Lauren Doyle, Elena Duarte, Florent Ducellier, Luc Dumaye, Xavier Dumusque, Marc-Antoine Dupret, Patrick Eggenberger, David Ehrenreich, Philipp

Eigmüller, Johannes Eising, Marcelo Emilio, Kjell Eriksson, Marco Ermocida, Riano Isidoro Escate Giribaldi, Yoshi Eschen, Inês Estrela, Dafydd Wyn Evans, Damian Fabbian, Michele Fabrizio, João Pedro Faria, Maria Farina, Jacopo Farinato, Dax Feliz, Sofia Feltzing, Thomas Fenouillet, Lorenza Ferrari, Sylvio Ferraz-Mello, Fabio Fialho, Agnes Fienga, Pedro Figueira, Laura Fiori, Ettore Flaccomio, Mauro Focardi, Steve Foley, Jean Fontignie, Dominic Ford, Karin Fornazier, Thierry Forveille, Luca Fossati, Rodrigo de Marca Franca, Lucas Franco da Silva, Antonio Frasca, Malcolm Fridlund, Marco Furlan, Sarah-Maria Gabler, Marco Gaido, Andrew Gallagher, Emanuele Galli, Rafael A. Garcia, Antonio García Hernández, Antonio Garcia Munoz, Hugo García-Vázquez, Rafael Garrido Haba, Patrick Gaulme, Nicolas Gauthier, Charlotte Gehan, Matthew Gent, Iskra Georgieva, Mauro Ghigo, Edoardo Giana, Samuel Gill, Leo Girardi, Silvia Giuliatti Winter, Giovanni Giusi, João Gomes da Silva, Luis Jorge Gómez Zazo, Juan Manuel Gomez-Lopez, Jonay Isai González Hernández, Kevin Gonzalez Murillo, Nicolas Gorius, Pierre-Vincent Gouel, Duncan Goulty, Valentina Granata, John Lee Grenfell, Denis Grießbach, Emmanuel Grolleau, Salomé Grouffal, Sascha Grziwa, Mario Giuseppe Guarcello, Loïc Gueguen, Eike Wolf Guenther, Terrasa Guilhem, Lucas Guillerot, Pierre Guiot, Pascal Guterman, Antonio Gutiérrez, Fernando Gutiérrez-Canales, Janis Hagelberg, Jonas Haldemann, Cassandra Hall, Rasmus Handberg, Ian Harrison, Diana L. Harrison, Johann Hasiba, Carole A. Haswell, Petra Hatalova, Artie Hatzes, Raphaelle Haywood, Guillaume Hébrard, Frank Heckes, Ulrike Heiter, Saskia Hekker, René Heller, Christiane Helling, Krzysztof Helminiak, Simon Hemsley, Kevin Heng, Aline Hermans, JJ Hermes, Nadia Hidalgo Torres, Natalie Hinkel, David Hobbs, Simon Hodgkin, Karl Hofmann, Saeed Hojjatpanah, Günter Houdek, Daniel Huber, Joseph Huesler, Alain Hui-Bon-Hoa, Rik Huygen, Duc-Dat Huynh, Nicolas Iro, Jonathan Irwin, Mike Irwin, André Izidoro, Sophie Jacquinod, Nicholas Emborg Jannsen, Markus Janson, Harald Jeszenszky, Chen Jiang, Antonio José Jimenez Mancebo, Paula Jofre, Anders Johansen, Cole Johnston, Geraint Jones, Thomas Kallinger, Szilárd Kálmán, Thomas Kanitz, Marie Karjalainen, Raine Karjalainen, Christoffer Karoff, Steven Kawaler, Daisuke Kawata, Arnoud Keereman, David Keiderling, Tom Kennedy, Matthew Kenworthy, Franz Kerschbaum, Mark Kidger, Flavien Kiefer, Christian Kintziger, Kristina Kislyakova, László Kiss, Peter Klagyivik, Hubert Klahr, Jonas Klevas, Oleg Kochukhov, Ulrich Köhler, Ulrich Kolb, Alexander Koncz, Judith Korth, Nadiia Kostogryz, Gábor Kovács, József Kovács, Oleg Kozhura, Natalie Krivova, Arunas Kučinskas, Ilyas Kuhlemann, Friedrich Kupka, Wouter Laauwen, Alvaro Labiano, Nadege Lagarde, Philippe Laget, Gunter Laky, Kristine Wai Fun Lam, Michiel Lambrechts, Helmut Lammer, Antonino Francesco Lanza, Alessandro Lanzafame, Mariel Lares Martiz, Jacques Laskar, Henrik Latter, Tony Lavanant, Alastair Lawrenson, Cecilia Lazzoni, Agnes Lebre, Yveline Lebreton, Alain Lecavelier des Etangs, Zoe Leinhardt, Adrien Leleu, Monika Lendl, Giuseppe Leto, Yves Levillain, Anne-Sophie Libert, Tim Lichtenberg, Roxanne Ligi, Francois Lignieres, Jorge Lillo-Box, Jeffrey Linsky, John Scige Liu, Dominik Loidolt, Yuying Longval, Ilídio Lopes, Andrea Lorenzani, Hans-Guenter Ludwig, Mikkel Lund, Mia Sloth Lundkvist, Xavier Luri, Carla Maceroni, Sean Madden, Nikku Madhusudhan, Antonio Maggio, Christian Magliano, Demetrio Magrin, Laurent Mahy, Olaf Maibaum, LeeRoy Malac-Allain, Jean-Christophe Malapert,

Luca Malavolta, Jesus Maldonado, Elena Mamonova, Louis Manchon, Andrew Mann, Giacomo Mantovan, Luca Marafatto, Marcella Marconi, Rosemary Mardling, Paola Marigo, Silvia Marinoni, Érico Marques, Joao Pedro Marques, Paola Maria Marrese, Douglas Marshall, Silvia Martínez Perales, David Mary, Francesco Marzari, Eduard Masana, Andrina Mascher, Stéphane Mathis, Savita Mathur, Ana Carolina Mattiuci Figueiredo, Pierre F. L. Maxted, Tsevi Mazeh, Stephane Mazevet, Francesco Mazzei, James McCormac, Paul McMillan, Lucas Menou, Thibault Merle, Farzana Meru, Dino Mesa, Sergio Messina, Szabolcs Mészáros, Nadége Meunier, Jean-Charles Meunier, Giuseppina Micela, Harald Michaelis, Eric Michel, Mathias Michielsen, Tatiana Michtchenko, Andrea Miglio, Yamila Miguel, David Milligan, Giovanni Mirouh, Morgan Mitchel, Nuno Moedas, Francesca Molendini, László Molnár, Joey Mombarg, Josefina Montalban, Marco Montalto, Mário J. P. F. G. Monteiro, Juan Carlos Morales, Maria Morales-Calderon, Alessandro Morbidelli, Christoph Mordasini, Chrystel Moreau, Thierry Morel, Guiseppe Morello, Julien Morin, Annelies Mortier, Benoît Mosser, Denis Mourard, Olivier Mousis, Claire Moutou, Nami Mowlavi, Andrés Moya, Prisca Muehlmann, Philip Muirhead, Matteo Munari, Ilaria Musella, Alexander James Mustill, Nicolas Nardetto, Domenico Nardiello, Norio Narita, Valerio Nascimbeni, Anna Nash, Coralie Neiner, Richard P. Nelson, Nadine Nettelmann, Gianalfredo Nicolini, Martin Nielsen, Sami-Matias Niemi, Lena Noack, Arlette Noels-Grotsch, Anthony Noll, Azib Norazman, Andrew J. Norton, Benard Nsamba, Aviv Ofir, Gordon Ogilvie, Terese Olander, Christian Olivetto, Göran Olofsson, Joel Ong, Sergio Ortolani, Mahmoudreza Oshagh, Harald Ottacher, Roland Ottensamer, Rhita-Maria Ouazzani, Sijme-Jan Paardekooper, Emanuele Pace, Miriam Pajas, Ana Palacios, Gaelle Palandri, Enric Palle, Carsten Paproth, Vanderlei Parro, Hannu Parviainen, Javier Pascual Granado, Vera Maria Passegger, Carmen Pastor-Morales, Martin Pätzold, May Gade Pedersen, David Pena Hidalgo, Francesco Pepe, Filipe Pereira, Carina M. Persson, Martin Pertenais, Gisbert Peter, Antoine C. Petit, Pascal Petit, Stefano Pezzuto, Gabriele Pichierri, Adriano Pietrinferni, Fernando Pinheiro, Marc Pinsonneault, Emese Plachy, Philippe Plasson, Bertrand Plez, Katja Poppenhaeger, Ennio Poretti, Elisa Portaluri, Jordi Portell, Gustavo Frederico Porto de Mello, Julien Poyatos, Francisco J. Pozuelos, Pier Giorgio Prada Moroni, Dumitru Pricopi, Loredana Prisinzano, Matthias Quade, ndreas Quirrenbach160, Julio Arturo Rabanal Reina6, Maria Cristina Rabello Soares, Gabriella Raimondo, Monica Rainer, Jose Ramón Rodón, Alejandro Ramón-Ballesta, Gonzalo Ramos Zapata, Stefanie Rätz, Christoph Rauterberg, Bob Redman, Ronald Redmer, Daniel Reese, Sara Regibo, Ansgar Reiners, Timo Reinhold, Christian Renie, Ignasi Ribas, Sergio Ribeiro, Thiago Pereira Ricciardi, Ken Rice, Olivier Richard, Marco Riello, Michel Rieutord, Vincenzo Ripepi, Guy Rixon, Steve Rockstein, María Teresa Rodrigo Rodríguez, Luisa Fernanda Rodríguez Díaz, Juan Pablo Rodriguez Garcia, Julio Rodriguez-Gomez, Yannick Roehlly, Fernando Roig, Bárbara Rojas-Ayala, Tobias Rolf, Jakob Lysgaard Rørsted, Hugo Rosado, Giovanni Rosotti, Olivier Roth, Markus Roth, Alex Rousseau, Ian Roxburgh, Fabrice Roy, Pierre Royer, Kirk Ruane, Sergio Rufini Mastropasqua, Claudia Ruiz de Galarreta, Andrea Russi, Steven Saar, Melaine Saillenfest, Maurizio Salaris, Sebastien Salmon, Ippocratis Saltas, Réza Samadi, Aunia Samadi, Dominic Samra, Tiago Sanches da Silva, Miguel

Andrés Sánchez Carrasco, Alexandre Santerne, Francesco Santoli, Ângela R. G. Santos, Rosario Sanz Mesa, Luis Manuel Sarro, Gaetano Scandariato, Martin Schäfer, Edward Schlafly, François-Xavier Schmider, Jean Schneider, Jesper Schou, Hannah Schunker, Gabriel Jörg Schwarzkopf, Aldo Serenelli, Dries Seynaeve, Yutong Shan, Alexander Shapiro, Russel Shipman, Daniela Sicilia, Maria Angeles Sierra Sanmartin, Axelle Sigot, Kyle Silliman, Roberto Silvotti, Attila E. Simon, Ricardo Simoyama Napoli, Marek Skarka, Barry Smalley, Rodolfo Smiljanic, Samuel Smit, Alexis Smith, Leigh Smith, Ignas Snellen, Ádám Sódor, Frank Sohl, Sami K. Solanki, Francesca Sortino, Sérgio Sousa, John Southworth, Diogo Souto, Alessandro Sozzetti, Dimitris Stamatellos, Keivan Stassun, Manfred Steller, Dennis Stello, Beate Stelzer, Ulrike Stiebeler, Amalie Stokholm, Trude Storelvmo, Klaus Strassmeier, Paul Anthony Strøm, Antoine Strugarek, Sophia Sulis, Michal Švanda, László Szabados, Róbert Szabó, Gyula M. Szabó, Ewa Szuszkiewicz, Geert Jan Talens, Daniele Teti, Tom Theisen, Frédéric Thévenin, Anne Thoul, Didier Tiphene, Ruth Titz-Weider, Andrew Tkachenko, Daniel Tomecki, Jorge Tonfat, Nicola Tosi, Regner Trampedach, Gregor Traven, Amaury Triaud, Reidar Trønnes, Maria Tsantaki, Matthias Tschentscher, Arnaud Turin, Adam Tvaruzka, Bernd Ulmer, Solène Ulmer-Moll, Ceren Ulusoy, Gabriele Umbriaco, Diana Valencia, Marica Valentini, Adriana Valio, Ángel Luis Valverde Guijarro, Vincent Van Eylen, Valerie Van Grootel, Tim A. van Kempen, Timothy Van Reeth, Iris Van Zelst, Bart Vandenbussche, Konstantinos Vasiliou, Valeriy Vasilyev, David Vaz de Mascarenhas, Allona Vazan, Marina Vela Nunez, Eduardo Nunes Velloso, Rita Ventura, Paolo Ventura, Julia Venturini, Isabel Vera Trallero, Dimitri Veras, Eva Verdugo, Kuldeep Verma, Didier Vibert, Tobias Vicanek Martinez, Krisztián Vida, Arthur Vigan, Antonio Villacorta, Eva Villaver, Marcos Villaverde Aparicio, Valentina Viotto, Eduard Vorobyov, Sergey Vorontsov, Frank W. Wagner, Thomas Walloschek, Nicholas Walton, Dave Walton, Haiyang Wang, Rens Waters, Christopher Watson, Sven Wedemeyer, Angharad Weeks, Jörg Weingril, Annita Weiss, Belinda Wendler, Richard West, Karsten Westerdorff, Pierre-Amaury Westphal, Peter Wheatley, Tim White, Amadou Whittaker, Kai Wickhusen, Thomas Wilson, James Windsor, Othon Winter, Mark Lykke Winther, Alistair Winton, Ulrike Witteck, Veronika Witzke, Peter Woitke, David Wolter, Günther Wuchterl, Mark Wyatt, Dan Yang, Jie Yu, Ricardo Zanmar Sanchez, María Rosa Zapatero Osorio, Mathias Zechmeister, Yixiao Zhou, Claas Ziemke, and Konstanze Zwintz. The PLATO mission, 2024.

[3] M. A. Weber, **Schunker, H.**, L. Jouve, and E. Işık. Understanding Active Region Origins and Emergence on the Sun and Other Cool Stars. *Space. Sci. Rev.*, 219(8):63, December 2023.

[4] C. S. Alley† and **Schunker, H.** Evolution of the magnetic field and flows of solar active regions with persistent magnetic bipoles before emergence. *Publications of the Astronomical Society of Australia*, 40:e059, 2023.

[5] C. Baumgartner†, A. C. Birch, H. **Schunker**, R. H. Cameron, and L. Gizon. Impact of spatially correlated fluctuations in sunspots on metrics related to magnetic twist. *A&A*, 664:A183, August 2022.

[6] N. Gottschling†, H. **Schunker**, A. C. Birch, R. Cameron, and L. Gizon. Testing solar surface flux transport models in the first days after active region emergence. *A&A*, 660:A6, April 2022.

[7] N. Gottschling†, H. **Schunker**, A. C. Birch, B. Löptien, and L. Gizon. Evolution of solar surface inflows around emerging active regions. *A&A*, 652:A148, August 2021.

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a function of mode frequency for six Sun-like stars. *A&A*, 568:L12, August 2014.

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slow and fast MHD waves. Evidence of solar cycle velocity/intensity amplitude changes consistent with the mode conversion theory. *A&A*, 516:A30, June 2010.

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Research Supervision

2022 **Supervisor of postdoctoral research**, Dr. Charlotte Gehan, University of Newcastle

2022- **Co-Supervisor of doctoral research and dissertation**, Chloe Wilkins, anticipated completion early 2026, University of Newcastle

2021- **Principal Supervisor of doctoral research and dissertation**, *Understanding Joy's Law*, William Roland-Batty, anticipated completion late 2024, University of Newcastle

2021- **Principal Supervisor of doctoral research and dissertation**, *Predicting emerging active regions on the Sun*, Geoff Skinner, (part-time) anticipated completion late 2026, University of Newcastle

2021 **Principal supervisor for Kavli Summer Program in Astrophysics**, *Asteroseismology for Ensembles of Stars*, Srijan Bharati Das, University of California Santa Cruz, six weeks, online

2018-2021 **Supervisor of doctoral research and dissertation**, *Dynamics of emerging solar active regions: Joy's Law*, Christian Baumgartner, University of Göttingen

2017-2021 **Supervisor of doctoral research and dissertation**, *Flows around active regions*, Nils Gottschling, University of Göttingen

2013-2016 **Supervisor of doctoral research and dissertation**, *Differential rotation in Sun-like stars from surface variability and asteroseismology*, Martin Bo Nielsen, summa cum laude, Dr. Berliner - Dr. Ungewitter Prize for outstanding research University of Göttingen

Undergraduate Research Project Supervision

SCIE3500 **Research Integrated Learning**, *research project supervisor*, University of Newcastle
- 2022 - Baxter Langlar
- 2021 - Camron Alley, Liam Dunn, Frederick Rodak

SENG4200 **Software Engineering Final Project**, *research project supervisor*, University of Newcastle
- 2023 - Declen Keir - Machine Learning for active region evolution on the Sun
- 2021 - Jacob Andronicus - Tracking and mapping regions of the Sun

PHYS4000 **Honours**, *research project supervisor*, University of Newcastle
- 2022 - Camron Alley - Constraining stellar rotation (First Class Honours, College of Engineering, Science and Environment Medal 2022 for achieving outstanding results)

2016- **Summer Students**, *research project supervisor*, University of Newcastle
- 2021 - Aditya Joshi - College of Engineering, Sciences and Environment summer scholarship
- 2020 - Megan Ferguson - Research and Innovations Division's Summer Research Internship
- 2020 - Cameron Alley - Science Faculty Summer vacation scholarship
- 2016 - Henrik Wolf - "Flows around solar pores", MPS, Germany

Teaching Roles & Speciality

I specialise in teaching electrodynamics, and teach courses at all undergraduate levels from first year to Honours. I develop and coordinate courses, lecture, host tutorials, and demonstrate in laboratories. I have an average Course Experience Survey score of 4.33, where 5 is the highest. Here I list the name of the courses I teach, with their course code, where the first number indicates the level from 1 (lowest) to 4 (highest).

PHYS4000 **Honours**, *Solar and Stellar Physics, Computational Physics and Data Analysis*, University of Newcastle

PHYS3112 **Photonics**, *Course coordinator and lecturer, electromagnetism*, including roll-out of new course in 2021, University of Newcastle

PHYS2112 **Classical Physics**, *Lecturer (waves and oscillations)*, University of Newcastle

PHYS2100 **Introduction to Astronomy**, *Course coordinator and lecturer*, including course re-structure and laboratory development, University of Newcastle

PHYS1220 **Advanced Physics II**, *Lecturer (electromagnetism, nuclear physics)* , including roll-out of new course in 2020, University of Newcastle

SCIE1200 **Introductory Physics for the Life Sciences**, *Laboratory demonstrator for physics component*, University of Newcastle

2012 **Invited lecturer**, *ISWI & MAGDAS Summer School on Space Science*, 7-26 September, Bandung Indonesia

2008 **Guest lecturer**, *Helioseismology*, International Max Planck Research School, Germany

Institutional Service

Institutional service is critical to ensure a positive workplace for colleagues and the highest quality learning experience for students.

2024 **Thomas Ranken Lyle Medal**, *awarded to Prof. George Willis*, Australian Academy of Science, Led and coordinated a successful campaign resulting in the prestigious award being granted to Prof. George Willis in 2025, significantly enhancing the University of Newcastle's reputation for academic excellence.

2024 **Facilitating a Research-Informed Framework for Equity in Physics**, *Centre of Excellence for Equity in Higher Education (CEEHE)*, University of Newcastle, Active participation in the project Facilitating a Research-Informed Framework for Equity in STEM led by UNESCO Chair Prof. Penny-Jane Bourke

2024-2025 **Nominated Academic Representative**, *Research Committee*, University of Newcastle, Active participation in the University's academic governance. Research Committee provides strategic advice to Academic Senate on research, research training and research related matters to ensure sustained high academic standards and to support the strategic directions of the University.

2024 **Invited Academic Representative**, *Research Advisory Team*, College of Engineering Science and Environment, Engaged to assist the College of Engineering, Science and Environment in strategic matters relating to quality improvement of research activities. The RAT work with the two Assistant Deans for Research to provide advice on funding opportunities from competitive Government schemes as well as opportunities with Industry partners.

2022-2023 **Research Advisory Committee member**, *College of Engineering, Science and Environment*, University of Newcastle, including ranking research applications for internal support, and nomination of Laureate Prof. George Willis for the Prime Ministers Prize for Science 2023 (successfully reached the last stage of selection). Organised public lecture for Australian Institute of Physics Women in Physics medal presentation (88 attendees, 30% external to the University).

2022-2023 **Research Advisory Committee member**, *School of Information and Physical Sciences*, University of Newcastle, including proposal to roll-over HDR student funding to sustainably and efficiently maximise the scientific output

2022-2023 **Teaching and Learning Committee member**, *College of Engineering, Science and Environment*, University of Newcastle, including streamlining the process for Course Outline approvals

2022 **Undergraduate Scholarships Evaluation Panel**, *College of Engineering, Science and Environment*, University of Newcastle

2021- **Recruitment panels for post-doctoral candidates**, *College of Engineering, Science and Environment*, University of Newcastle

2020- **TESS Asteroseismic Science Consortium**, Working Group 2

2019-2020 **Equal Opportunities Officer**, Max Planck Institute for Solar System Research

2012 **Direktionsbeirat (Director's advisory board)**, Max Planck Institute for Solar System Research

2011-2020 **Education and public outreach officer**, *Solar and Stellar Interiors department*, Max Planck Institute for Solar System Research

2009-2020 **Webmaster for department website**, *Solar and Stellar Interiors department*, Max Planck Institute for Solar System Research

Education and Public Outreach

Effective public engagement is important to build trust, garner support, and increase public scientific knowledge. I make an effort to engage with children, high-school students and adults. I particularly value the questions from a lay audience that allows me to see my research and its broader impact from a different perspective.

2024 **Newcastle Herald**, *Author: Jessica Belzycki*, Experts say it's 'unlikely' Hunter will see aurora australis for second night, quoted in article

2024 **The Conversation: I heard there's an aurora coming. How do I check?**, *author*, online, 22,653 readers as of December 2024

2024 **ExperimentFest, University of Newcastle**, *Physics Lab demonstrator*, Local physics HSC students, 1 session

2024 **Work Experience Host**, *Eden Gorman*, Newcastle Grammar School, 1 week

2024 **The Conversation: Why are auroras so hard to predict? And when can we expect more?**, *author*, online, 12,266 readers as of December 2024

2023 **Work Experience Host**, *Milo Garland*, Maitland High School, 1 week

2022 **ABC's Catalyst "Solar storms: a warning from space" episode** , *talent*, television, with viewership of 476k people including 34k views on ABC iView (as of 5 April 2022).

2022 **ABC iView's Elevator Pitch "Fusion" episode**, *talent*, YouTube, 2900 views as of December 2022

2022 **ABC Science, Genelle WeuleJust how bad could a big solar storm be in the internet age? And how would Australia be affected?**, *talent*, online news, 301,482 views as of April 2022

2022 **'The Magnetic Sun' public talk**, *presenter*, Hunter Pi in the Sci, approx. 20 audience members

2021 **The Conversation: why do we see the 'sky' during the day, but the galaxy at night?**, *author*, online, 31,969 readers as of December 2024

2021 **The Conversation: why is the Sun's atmosphere hotter than its surface?**, *author*, online, 29,414 readers as of December 2024

2021 **Children's University, Hands-on activity session on magnetism**, *coordinator & lead*, approx. 50 students age 7-10 years, University of Newcastle

2021 **National Youth Science Forum, Viewing the Sun activity**, *coordinator & lead*, approx. 60 students age 16-17 years, University of Newcastle

2020 **Children's University, 'The Sun' online video presentation**, *coordinator & lead*, University of Newcastle

2020- **TESS Asteroseismic Science Consortium**, Working Group 2

2015-2019 **Zweite, Dritte und Vierte Nacht des Wissens, 'Sounds of the Stars' interactive display**, *coordination and display development*, approx. 3000 attendees, Göttingen, Germany

2012 **Erste Nacht des Wissens, 'Sounds of the Stars' public talk**, *presenter*, approx. 100 attendees, Göttingen, Germany

Awards and Honours

2024 **Outstanding Invited Speaker Abstract**, *17th European Solar Physics Meeting*, European Physical Society

2022 **Outstanding Contribution to Teaching Award**, *College of Engineering Science and Environment*, University of Newcastle, for a student-centred approach to teaching practice

2022 **Australian Academy of Science 'Science at the Shine Dome' awards ceremony**, *EMCR sponsored attendee*

2021 **Teaching Excellence award**, *College of Engineering Science and Environment*, University of Newcastle, for a flexible approach to online learning

1999 **Claire Corani Memorial Prize**, *Best second year undergraduate female physics student, University of Adelaide*

Professional Memberships

2024-2028 **Appointed Science Discipline Representative**, *Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)*, selected for scientific expertise in solar-terrestrial physics and serve as a source of scientific advice for new programs, projects, and as leaders of working groups established by the Bureau

2023-2026 **Appointed member of the National Committee for Space and Radio Science**, *Australian Academy of Sciences*

2022- **Fellow of the Astronomical Society of Australia**

2021- **International Astronomical Union elected committee member**, *commission E2 'Solar Activity'*

2015- **International Astronomical Union member**, Division E Sun and Heliosphere, Division G Stars and Stellar Physics

Commissions of Trust

2024 **Thesis Examiner**, *"Investigating Magnetic Activity and Activity Cycles in Cool, Young Main Sequence Stars"by Deepak Chahal*, Supervisors: Richard de Grijs, D. Kamath, Macquarie University, Australia

2023 **Scholarship assessor**, *Elevate: boosting women in STEM*, Australian Academy of Technological Sciences and Engineering, Australia

2023 **Proposal reviewer**, *Australian Research Council*, Australia

2022 **Proposal reviewer**, *NSW Space Research Network*, Australia

2007- **Scientific journal referee**, *high-impact, peer-reviewed journals*, Nature Astronomy, Nature Communications, Solar Physics, Astronomy and Astrophysics, and Astrophysical Journal

2020- **TESS Asteroseismic Science Consortium**, Working Group 2

2011-2016 **Proposal reviewer**, *NASA, Research Opportunities in Space and Earth Science review panel*, U.S.A.

Career Development & Mentoring Activities

2023 **Elevate: Boosting Women in STEM program**, *invited to join the Assessment Panel in recognition of my commitment to building a diverse and inclusive STEM sector*, Australian Academy of Technological Sciences and Engineering

2022 **Women in STEM Mentoring Program (mentor)**, *Sophie Baker (undergraduate student)*, University of Newcastle

2022 **Envisage, Academic Navigation program (mentee)**, *Prof. Jacqueline Phillips (Macquarie University)*, University of Newcastle

2020 **Contemporary Approaches to University Teaching**, *online course*, Swinburne University

2012-2014 **Dorothea Schlözer mentoring program (mentee)**, *mentor Prof. Ariane Frey; including conflict management, negotiation skills, time management courses*, University of Göttingen

Languages

English Mother tongue

German Conversational