# Dag Evensberget

## Personal details

**Citizenship:** Norwegian

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## Academic Work Experience

July 2022–present | **Postdoctoral researcher in astrophysics**, Leiden Observatory, Leiden University, The Netherlands.

## Education

2017–2022 | **Ph. D. in Astrophysics**, University of Southern Queensland, Australia.
Doctoral thesis: *The winds of young Suns.*

2012–2013 | Coursework student, astrophysics and geophysics, University of Oslo, Norway.

2006–2007 | **M.Sc. in Space Studies**, International Space University, France.

1999–2006 | **M.Sc. in Industrial Mathematics**, Norwegian University of Science and Technology, Norway. Project Thesis: *An Investigation of Godunov Methods in Non-Cartesian Geometries with an Application to Comet-Atmospheric Shocks.*

## Refereed Journal Articles

2024 | **D**. **Evensberget** and A. A. Vidotto. Rotational evolution of young-to-old stars with data-driven three-dimensional wind models. *MNRAS*, 529(1):L140–L146, Mar. 2024. doi: 10.1093/mnrasl/slae010.

2023 | **D**. **Evensberget**, S. C. Marsden, B. D. Carter, R. Salmeron, A. A. Vidotto, C. P. Folsom, R. D. Kavanagh, J. S. Pineda, F. A. Driessen, and K. M. Strickert. The winds of young Solar-type stars in the Pleiades, AB Doradus, Columba, and $\beta$ Pictoris. *MNRAS*, 524(2):2042–2063, Sept. 2023. doi: 10.1093/mnras/stad1650.

2023 | S. C. Marsden, **D**. **Evensberget**, E. L. Brown, C. Neiner, J. M. Seach, J. Morin, P. Petit, S. V. Jeffers, and C. P. Folsom. The magnetic field and stellar wind of the mature late-F star $\chi$ Draconis A. *MNRAS*, 522(1):792–810, June 2023. doi: 10.1093/mnras/stad925.

2022 | **D**. **Evensberget**, B. D. Carter, S. C. Marsden, L. Brookshaw, C. P. Folsom, and R. Salmeron. The winds of young Solar-type stars in Coma Berenices and Hercules-Lyra. *MNRAS*, 510(4):5226–5245, Mar. 2022. doi: 10.1093/mnras/stab3557.

2022 | J. M. Seach, S. C. Marsden, B. D. Carter, **D**. **Evensberget**, C. P. Folsom, C. Neiner, and M. W. Mengel. The magnetic fields and stellar winds of the mature late F-stars: $\beta$ Virginis and $\theta$ Draconis. *MNRAS*, 509(4):5117–5141, Feb. 2022. doi: 10.1093/mnras/stab3289.

2021 | **D**. **Evensberget**, B. D. Carter, S. C. Marsden, L. Brookshaw, and C. P. Folsom. The winds of young Solar-type stars in the Hyades. *MNRAS*, 506(2):2309–2335, Sept. 2021b. doi: 10.1093/mnras/stab1696.

2021   B. C. Addison, D. J. Wright, B. A. Nicholson, B. Cale, T. Mocnik, D. Huber, P. Plavchan, R. A. Wittenmyer, A. Vanderburg, W. J. Chaplin, A. Chontos, J. T. Clark, J. D. Eastman, C. Ziegler, R. Brahm, B. D. Carter, M. Clerte, N. Espinoza, J. Horner, J. Bentley, A. Jordán, S. R. Kane, J. F. Kielkopf, E. Laychock, M. W. Mengel, J. Okumura, K. G. Stassun, T. R. Bedding, B. P. Bowler, A. Burnelis, S. Blanco-Cuaresma, M. Collins, I. Crossfield, A. B. Davis, **D. Evensberget**, A. Heitzmann, S. B. Howell, N. Law, A. W. Mann, S. C. Marsden, R. A. Matson, J. H. O'Connor, A. Shporer, C. Stevens, C. G. Tinney, C. Tylor, S. Wang, H. Zhang, T. Henning, D. Kossakowski, G. Ricker, P. Sarkis, M. Schlecker, P. Torres, R. Vanderspek, D. W. Latham, S. Seager, J. N. Winn, J. M. Jenkins, I. Mireles, P. Rowden, J. Pepper, T. Daylan, J. E. Schlieder, K. A. Collins, K. I. Collins, T.-G. Tan, W. H. Ball, S. Basu, D. L. Buzasi, T. L. Campante, E. Corsaro, L. González-Cuesta, G. R. Davies, L. de Almeida, J. do Nascimento, Jose-Dias, R. A. García, Z. Guo, R. Handberg, S. Hekker, D. R. Hey, T. Kallinger, S. D. Kawaler, C. Kayhan, J. S. Kuszlewicz, M. N. Lund, A. Lyttle, S. Mathur, A. Miglio, B. Mosser, M. B. Nielsen, A. M. Serenelli, V. S. Aguirre, and N. Themeßl. TOI-257b (HD 19916b): a warm sub-saturn orbiting an evolved F-type star. *MNRAS*, 502(3):3704–3722, Apr. 2021. doi: 10.1093/mnras/staa3960.

2021   J. Bailey, K. Bott, D. V. Cotton, L. Kedziora-Chudczer, J. Zhao, **D. Evensberget**, J. P. Marshall, D. Wright, and P. W. Lucas. Polarization of hot Jupiter systems: a likely detection of stellar activity and a possible detection of planetary polarization. *MNRAS*, 502(2):2331–2345, Apr. 2021. doi: 10.1093/mnras/stab172.

2019   D. V. Cotton, **D. Evensberget**, S. C. Marsden, J. Bailey, J. Zhao, L. Kedziora-Chudczer, B. D. Carter, K. Bott, A. A. Vidotto, P. Petit, J. Morin, and S. V. Jeffers. The rotationally modulated polarization of $\xi$ Boo A. *MNRAS*, 483(2):1574–1581, Feb. 2019. doi: 10.1093/mnras/sty3180.

## Refereed Conference Papers and Posters

2021   **D. Evensberget**, B. Carter, S. Marsden, and L. Brookshaw. Preliminary mass loss results from a survey of stellar winds for young, Sun-like stars. In *The 20.5th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun (CS20.5)*, Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, page 265, Mar. 2021a. doi: 10.5281/zenodo.4567660.

2018   B. Carter, B. Nicholson, **D. Evensberget**, S. Marsden, J. Hughes, G. Perugini, S. Zaleski, T. Holt, J. Kielkopf, C. Tylor, and I. Waite. The Shared Evolution of Stars and their Planetary Systems. In *20th Cambridge Workshop on Cool Stars, Stellar Systems and the Sun*, Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, page 64, July 2018. doi: 10.5281/zenodo.1481277.

2018   **D. Evensberget**. A survey of stellar winds for young, Sun-like stars. In *20th Cambridge Workshop on Cool Stars, Stellar Systems and the Sun*, Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, page 57, July 2018. doi: 10.5281/zenodo.1479155.

2010   **D. Evensberget**. Drag-Free Control Systems Modelling in Operational Simulators. In *IAC Conference Proceedings*, 2010.

2007   **D. Evensberget**. Mechanics of the Space Elevator. In *IAC Conference Proceedings*, 2007.

## Awards/Fellowships/Scholarships

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| 2017–Present | USQ Full tuition scholarship for international students AUD \$108,800. |
| 2017–Present | USQ Living expenses scholarship AUD \$120,000. |
| 2020 | Student talk award. USQ HDR Research Symposium. |
| 2018 | Student poster award. 18th Australian Space Research Conference. |

## Teaching Experience

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| 2018–2021 | **Assistant Examiner, University of Southern Queensland**. At USQ the course assistant examiner handles student contacts, provides on-line lectures and tutorials, and creates and marks assignments as well as the final exam. PHY8004 Stellar physics (master 1st year), PHY3306 Stellar and Solar physics (bachelor 3rd year), PHY2204 Astrophysical Techniques (bachelor 2nd year), PHY1107 Astronomy 2 (bachelor 1st year). |
| 2019-2021 | **Lab Demonstrator, University of Southern Queensland**. Supervised engineering students in ENG1901 Engineering Fundamentals labs. |
| Summer 2011 | **Interdisciplinary Teaching Associate, International Space University.** "Human-Robotic Interaction" team project. The project explored the relative advantages and disadvantages of human space exploration versus robotic space exploration. |
| 2007–2011 | **Spacecraft Simulation Engineer at Telespazio Vega Deutschland GmbH.** Taught principles of space engineering, orbital mechanics, rockets, and remote sensing to spacecraft controllers (technical staff that monitor spacecraft and perform routine operations). |
| Summer 2010 | **Teaching Associate in Physical Science, International Space University.** Organised workshops in astronomy and physics. Managed and instructed students from a very diverse set of nationalities and professional backgrounds. |
| Summer 2007 | **Spacecraft Operations Engineer, NASA Jet Propulsion Laboratory.** Worked with the *Ulysses* spacecraft operations team. Audited the spacecraft fuel consumption estimation software and manoeuvre history. |
| Summer 2005 | **Scientific Software Developer, Paul Scherrer Institut.** Worked with removing memory bottleneck in `FemaXX`, a parallel processing (C++/MPI) code for calculating the electromagnetic field in a particle accelerator. |
| 2000–2006 | **Teaching Assistant, Norwegian University of Science and Technology.** Taught numerical analysis, complex analysis and calculus to engineering students. |

## Research Experience

**Stellar wind modelling:** In am very familiar with creating and evaluating Solar and stellar wind models, mainly using the Space Weather Modelling Framework (SWMF) code. The model evaluation includes comparison to Solar in-situ measurements and inferred constraints on stellar winds.

**Zeeman-Doppler imaging:** From my Ph. D. I have experience in creating three-component surface magnetic maps from Stokes $I$ and $V$ spectropolarimetric data using the maximum entropy method.

**Polarimetric observations:** I have conducted polarimetric observations with the *HIPPI* instrument at the Anglo-Australian Telescope; resulting in two publications (Cotton et al., 2019; Bailey et al., 2021).

**Spectrometric observations:** I have conducted observations at USQ's Mount Kent observatory; the observations have resulted in a published paper (Addison et al., 2021) and a second paper is in preparation.

**Hydrodynamic modelling:** In my M.Sc. degree i programmed a two-dimensional hydrodynamic solver using a non-Cartesian grid from scratch using MATLAB. I used my code to model shocks and contact discontinuities that may arise in the atmosphere of comets as they approach the Sun.

# Conference participation

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| 2021 | **Contributed talk**. ASTRO 3D ECR Astronomers in Australia Seminar. |
| 2021 | **Contributed talk**. Astronomical Society of Australia Annual Science Meeting. |
| 2021 | **Contributed talk**. 9$^{th}$ BCool meeting. |
| 2021 | Poster. 20$\frac{1}{2}$$^{th}$ Cambridge Workshop on Cool Stars, Stellar Systems and the Sun. |
| 2020 | **Contributed talk**. USQ HDR Research Symposium. |
| 2019 | Poster. Astronomical Society of Australia Annual Scientific Meeting. Member of the **local organising committee**. |
| 2019 | **Contributed talk**. 8$^{th}$ BCool meeting. |
| 2018 | Poster. 18$^{th}$ Australian Space Research Conference. |
| 2018 | **Contributed talk**. 20$^{th}$ Cambridge Workshop on Cool Stars, Stellar Systems and the Sun. |

# Relevant skills

I have a good theoretical understanding of vector calculus and numerical methods; I have taught calculus, complex analysis and numerical analysis as a teaching assistant.

In my Ph. D. I have become very familiar with Python, `numpy`, `scipy`, and `matplotlib` as well as 3D visualisation with Tecplot, `pytecplot` and the `yt` project.

I have worked as a lead C++ developer, and I am familiar with `boost` and the Armadillo matrix library.

As a professional programmer I have written code in Fortran, C, Java, Javascript, MPI, MATLAB, Simulink and MS Visual Basic.

I am very familiar with the LaTeX document preparation system.

# Other work experience

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| 2011–2016 | **Software Developer at Science [&] Technology AS**, Oslo, Norway. Developing data processing software for Earth observation satellites: Ice sheet interferometric synthetic aperture radar data processor, Sentinel-4 atmospheric sounder instrument simulator, volcanic ash atmospheric transport visualisation tools. |
| 2007–2011 | **Spacecraft Simulation Engineer at Telespazio Vega**, Darmstadt, Germany. Developed software models for spacecraft and conceptual Mars lander sensors and actuators. Interfaced models with orbital dynamics and attitude simulations. Taught spacecraft controllers (orbital mechanics, electromagnetism, rockets). |

# Professional membership

Astronomical Society of Australia, International Space University visiting faculty, Software Carpentries certified instructor.

# Referees

Prof. Bradley Carter, Director, USQ Centre for Astrophysics, +61 7 3470 4131, brad.carter@usq.edu.au
A/Prof. Stephen Marsden, USQ Centre for Astrophysics, +61 7 4687 5841, stephen.marsden@usq.edu.au
Dr. Raquel Salmeron, USQ Centre for Astrophysics, +61 7 3812 6062, raquel.salmeron@usq.edu.au