

# Dominic M. Bowman

PhD., MSci. (Hons), FRAS, MInstP

**Date of birth:** 15 October 1990

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**Place of birth:** Nuneaton, United Kingdom

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## I. Personal Statement

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Currently I am an [FWO](#) senior postdoctoral research fellow in the [Institute of Astronomy](#) at KU Leuven. My primary research focus is asteroseismology of high- and intermediate-mass stars. The analysis of stellar pulsations reveals tight constraints on interior physics such as rotation, mixing and angular momentum transport. My expertise includes the extraction and analysis of photometric and spectroscopic data from space- and ground-based telescopes, and forward seismic modelling of pulsating stars. I am passionate about actively developing teaching at the BSc, MSc and PhD level, and advocacy and outreach activities for all ages and backgrounds.

My undergraduate studies at the University of Birmingham inspired me to pursue a research career in asteroseismology. I completed my PhD at the University of Central Lancashire in the UK under the supervision of Prof. Donald Kurtz, and my thesis was published as a [Springer monograph](#). I published a high-impact first-author paper in [Nature Astronomy](#) on my postdoctoral research at KU Leuven, Belgium, which was selected as the cover image for the [August 2019](#) issue. In November 2020, I began a prestigious and competitive 3-yr FWO research fellowship based at KU Leuven. I have won several prestigious and competitive prizes for research excellence, including the [Springer thesis prize](#) (2017), the [KU Leuven Research Council Award](#) in Science, Engineering and Technology (2020), the [Henri Vanderlinden Prize](#) of the Flemish Academy (2022), and the [George Darwin Lectureship](#) of the Royal Astronomical Society (2023).

## II. Education

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### Postgraduate degree, PhD

Oct 2013 – Nov 2016

PhD in astronomy with thesis title: *Amplitude modulation and energy conservation of pulsation modes in delta Scuti stars*, awarded on 21 November 2016 by the University of Central Lancashire, Preston, UK. My supervisor was Prof. Donald Kurtz and I was funded by the UK Science and Technology Facilities Council (STFC). I passed my PhD defence outright with no corrections about six months ahead of schedule.

### Undergraduate degree, MSci

Sept 2009 – June 2013

First class integrated Master (BSc + MSc) in Science (M.Sci.) degree with honours in physics and astrophysics from the University of Birmingham in the UK, with an award date of 8 July 2013.

## III. Employment

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### FWO Senior Postdoctoral Fellowship

1 Nov 2020 – date

Institute of Astronomy, KU Leuven, Celestijnenlaan 200D, 3001 Leuven, Belgium. Independent and personal mandate funded by Fonds Wetenschappelijk Onderzoek (FWO) Vlaanderen (grant agreement N° 1286521N).

### Postdoctoral Research Associate

1 Feb 2017 – 31 Oct 2020

Institute of Astronomy, KU Leuven, Celestijnenlaan 200D, 3001 Leuven, Belgium. Funded by the European Union's Horizon 2020 research and innovation programme (grant agreement N° 670519: MAMSIE, PI Aerts).

### Lecturer in Astronomy

19 Sept 2016 – 13 Jan 2017

Jeremiah Horrocks Institute, University of Central Lancashire, Preston, PR1 2HE, United Kingdom.

## IV. Scientific Prizes and Awards

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### George Darwin Lectureship, RAS

Jan 2023

Awarded the 2023 [George Darwin Lectureship](#) of the Royal Astronomical Society (RAS) for being an authoritative and engaging researcher in astronomy.

### Henri Vanderlinden Prize, Royal Flemish Academy

Dec 2022

Prestigious and competitive prize for an important original work in the field of astronomy from the [Koninklijke Vlaamse Academie van België](#) (KVAB) voor Wetenschappen en Kunsten, which included a cash prize.

### Long Stay Abroad Award, FWO

Oct - Dec 2021

I was awarded a competitive FWO grant for a long research stay abroad to cover all costs for my invited visit to KITP, California, USA for 3 months in 2021, for a total of approximately €6000.

### Research Council Award (POR), KU Leuven

May 2020

Prestigious and highly-competitive prize from KU Leuven's [Research Council](#) awarded to one postdoc in STEM for research excellence and an upwards career trajectory, which included €20 000 of research funding.

### Springer Thesis Award

Oct 2017

My PhD thesis was published in the [Springer thesis series](#) in 2017 for 'Outstanding PhD Research'. This prestigious prize allowed me to expand my thesis into a monograph and included a cash prize.

### Small Travel Grants

Numerous travel bursary applications from funding bodies for attending conferences, which include STFC and RAS in the UK, CNRS in France and FWO in Belgium, with a combined total of approximately €5000.

## V. Conference Organisation

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### EAS 2023, Kraków, Poland

10 – 14 July 2023

SOC member of the BRITE/MOBSTER symposium entitled 'From stellar variability to stellar structure and evolution' at the EAS 2023 meeting.

### TASC6/KASC13, Leuven, Belgium

11 – 15 July 2022

Chair of the LOC for the TASC6/KASC13 conference of the asteroseismic community, which was held in Leuven, had 200 in-person and 100+ online participants. Postponed from 2020 because of the COVID-19 pandemic.

### EAS 2021, Virtual (hosted by Leiden University, the Netherlands)

28 June – 2 July 2021

Co-Chair of the SOC of the symposium titled "Massive stars: birth, rotation, and chemical evolution" at the EAS 2021 meeting, which had more than 100 participants.

### MOBSTER-1, Virtual (hosted by University of Delaware, USA)

13 – 17 July 2020

Co-Chair of the SOC for the virtual MOBSTER-1 conference, which had more than 170 participants.

### EAS 2020, Virtual (hosted by Leiden University, the Netherlands)

29 June – 3 July 2020

Chair of the SOC of the session titled "New insights of angular momentum transport in stellar interiors" held on 1 June during the EAS 2020 meeting, which had 100 participants.

### STARS2016, Windermere, UK

11 – 15 Sept 2016

Chair of the LOC for the conference celebrating the career of Prof. Donald Kurtz, which had 75 participants and a budget of €50 000. Successful grant applications included €3500 from the RAS and €8000 from UCLan.

## VI. Personal Training

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### Anti-Racism in Astronomy and Geophysics, Virtual, (hosted by RAS)

12 Aug 2021

Seminars and training sessions on anti-racism initiatives in academia.

### Sex and Gender Dimensions in Frontier Research, Virtual (hosted by ERCEA)

16 Nov 2020

Seminars and training sessions on diversity initiatives in academia.

- Voice of the future**, *Westminster, London, UK* 15 Mar 2017  
I was an ECR representative of the RAS to attend this meeting on bridging scientists and UK politicians.
- STFC careers event**, *Institute of Physics, London, UK* 21 Oct 2015  
I was successful in my application for an STFC travel grant for the costs of attending.
- Media training for outreach**, *Royal Society, London, UK* 7 Oct 2015  
I was successful in my application for an STFC bursary for the costs of attending.

## VII. International Responsibilities and Committees

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- Executive Organising Committee Member, IAU WGABS** Nov 2022 – date  
Executive [organising committee member](#) for the [active B-star working group](#) (WGABS) of the IAU.
- WG Chair, Arago space mission** Jan 2022 – date  
Chair of the 'Hot (BA) Stars' working group for the [Arago mission](#), which was a proposed M7 ESA space mission on UV+Visible spectropolarimetry of stars across the HR diagram.
- Associate Editor, Frontiers** Feb 2021 – date  
Editorial board member and [Associate Editor](#) for the journal '*Frontiers in Astronomy and Space Sciences*' and Review Editor for the journal '*Frontiers in Physics*'.
- XShootU WG12 chair** Dec 2020 – date  
Point of contact (chair) of WG12: pulsations of ULLYSES targets within the [XShootU](#) collaboration.
- Good Vibrations seminar series** Nov 2020 – date  
Steering committee member for the [Good Vibrations](#) seminar series, which promotes and provides opportunities for PhD students to share their research internationally.
- co-PI MOBSTER collaboration** Nov 2020 – date  
Together with PI Alex David-Uraz and co-PI Coralie Neiner, we are in charge of organising and maximising the scientific productivity of the [MOBSTER](#) collaboration, which leverages TESS data to identify and study massive magnetic stars.
- SHOC@SAAO pipeline developer** July 2020 – date  
I am the principal author of the [TEA-PHOT](#) pipeline to reduce and extract light curves from the SHOC imager at SAAO. The TEA-PHOT pipeline is published: Bowman & Holdsworth (2019, A&A 629, A21), and is fully endorsed by the [SAAO instrument team](#) as the go-to reduction pipeline.
- RAS ECN committee member** June 2020 – date  
Secretary for the [Early Careers Network \(ECN\)](#) of the UK Royal Astronomical Society (RAS).
- BEST member** Sept 2019 – date  
Non-voting member of the [BRITE Executive Science Team](#) (BEST) for the BRITE-constellation space mission.
- Scientific co-PI and Mission Scientist, CubeSpec space mission** Jan 2019 – date  
Scientific co-PI and mission scientist for the development and implementation of the massive star asteroseismology science case for the [CubeSpec](#) cubesat mission being built by KU Leuven in collaboration with ESA and private contractors.
- ESO OPC expert panel member** Sept 2021 to Jan 2023  
OPC expert panel member in panel D (Stellar Evolution) for ESO proposal semesters P109 – P111.
- PLATO external reviewer** Nov 2020  
External reviewer for the on-ground data processing algorithms on behalf of the complementary science program (WP16) of the ESA PLATO mission.

## VIII. Scientific Organisation Membership

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Junior Member of the [International Astronomical Union \(IAU\)](#) since January 2020.

Member of the [European Astronomical Society \(EAS\)](#) since April 2019.

Fellow of the [Royal Astronomical Society \(FRAS\)](#) since October 2013.

Member of the [Institute of Physics \(MInstP\)](#) since October 2013.

## IX. Observing Projects and Experience

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### **European Southern Observatory (ESO), Chile**

14 nights of observing experience as visiting astronomer in December 2019 using the FEROS spectrograph mounted on the 2.2-m MPG/ESO telescope at the La Silla observatory, ESO.

- Co-I of ESO programme obtaining multi-epoch high-resolution spectroscopy of gamma Doradus stars with UVES (*106.21S8.001; 106.21S8.002; 106.21S8.003; 21 hr; PI Christophe*).
- Co-I of MPG/ESO programme obtaining multi-epoch high-resolution spectroscopy of massive binary stars with FEROS (*0106.A-9106; 90 hr; PI Aerts*).
- Co-I of ESO large programme obtaining multi-epoch high-resolution spectroscopy of massive stars with UVES (*1104.D-0230; 120 hr; PI Tkachenko*).
- Co-I of MPG/ESO programme obtaining multi-epoch high-resolution spectroscopy of massive stars with FEROS (*0104.A-9001; 120 hr; PI Aerts*).
- Co-I of ESO DDT obtaining phase-resolved high-resolution spectroscopy of the pulsating eclipsing binary system U Gru with UVES (*103.200F; 4 hr; PI Johnston*).

### **Transiting Exoplanet Survey Satellite (TESS), NASA**

- PI of three TESS Guest Investigator proposals obtaining high-precision and short-cadence time series photometry of massive stars in cycle 3 in 2020 (*GO3059; 1058 stars; PI Bowman*), cycle 4 in 2021 (*GO4074; 1618 stars; PI Bowman*), and cycle 5 in 2022 (*GO5036; 1818 stars; PI Bowman*).
- Co-I of multiple TESS Guest Investigator proposals obtaining high-precision and short-cadence time series photometry of intermediate- and high-mass stars in cycles 1–4.

### **South African Astronomical Observatory (SAAO), Sutherland, South Africa**

21 nights of observing experience as visiting astronomer in May and June 2017 using the SHOC imager mounted on the 1-m telescope at SAAO to obtain high-cadence photometry of roAp stars.

- PI of service time proposal to gain high-cadence photometry of candidate roAp stars in May 2018.

### **Mercator Observatory, La Palma, Spain**

65 nights of observing experience using the HERMES and MAIA instruments on the 1.2-m Mercator telescope between 2017 and 2022, which includes visitor mode and service observing.

- PI of HERMES large program awarded 1000+ hr across 2022-2025 to obtain multi-epoch spectroscopy of pulsating massive stars discovered by TESS.
- PI of HERMES proposal awarded 80 hr in semester 2021a to obtain time-series spectroscopy of high-mass pulsating eclipsing binaries discovered by TESS.
- PI of MAIA proposal awarded 120 hr in semester 2020b to obtain short-cadence multi-colour time-series photometry of roAp stars observed by K2 and TESS.
- PI of HERMES proposal awarded 70 hr in semester 2018b, 35 hr in semester 2019a and 90 hr in semester 2019b to obtain spectroscopy of Ap stars being observed by TESS.

- PI of a HERMES proposal awarded 60 hr in semester 2018a to obtain accurate stellar parameters for pulsating B, A and F stars in the *Kepler* field for forward seismic modelling.
- PI of a HERMES proposal awarded 40 hr in semester 2017a and 20 hr in semester 2018a to study high-mass companions to  $\delta$  Sct stars in binary systems discovered using pulsation timing.

#### **Moses Holden Telescope (MHT), UCLan, Preston, UK**

20 nights of observing experience using the imager on the 0.75-m MHT in 2016 and 2017.

#### **William Herschel Telescope (WHT), La Palma, Spain**

- PI of service time proposal in 2016 to gain accurate  $T_{\text{eff}}$  values for 23  $\delta$  Sct stars observed by *Kepler*.

## **X. Teaching and Supervision Experience**

Supervisor of **1** PhD student to completion and **1** ongoing PhD student, and member of a further **4** PhD supervisory/examination committees. Supervisor of **5** MSc students to completion and **1** ongoing MSc student, and member of a further **5** MSc supervisory/examination committees.

#### **PhD theses, KU Leuven, Belgium**

- **Co-supervisor** of Jordan Van Beeck Sept 2019 – date  
*Application of non-linear asteroseismology to Kepler and TESS photometry*
- Progress committee member of Joris Hermans Sept 2019 – date  
*Solar flux ropes and tornadoes*
- Examination committee (jury) member of Mathias Michielsens Nov 2022  
*Forward seismic modelling of B-type stars*
- Examination committee (jury) member of Camilla Scolini May 2020  
*Magnetised Coronal Mass Ejections: evolution from the Sun to 1 AU and geo-effectiveness*
- **Supervisor** of Siemen Burssens Sept 2018 – July 2022  
*Massive star asteroseismology with K2 and TESS*
- Progress and examination committee (jury) member of Joey S. G. Mombarg Feb 2018 – Feb 2022  
*Asteroseismic modelling of intermediate-mass stars*
- Long-stay host research supervisor of Mariel Lares-Martiz Sept 2019 – Dec 2019  
*Non-linear terms in Delta Scuti stars power spectra*

#### **Master theses, KU Leuven, Belgium**

- **Supervisor** of Pieterjan Van Daele Sept 2022 – date  
*New algorithms to extract blended TESS photometry of massive stars*
- Examination committee member (reader) of Thijs Verhaeghe June 2022  
*A Target Scheduling Heuristic for CubeSpec*
- **Supervisor** of Stijn Rutten Sept 2021 – Sept 2022  
*A new user-friendly aperture photometry pipeline for MAIA: variability in pulsating stars*
- **Supervisor** of Nagaraj Vernekar Sept 2020 – Sept 2021  
*On the photometric and spectroscopic variability of Be stars: the case of HD 93683*
- Examination committee member (reader) of Anne Daniels June 2021  
*Permutation entropy and statistical complexity to characterise space plasmas*
- Examination committee member (reader) of Mariya Nizovkina June 2021  
*Investigating the effect of microturbulent velocity on mass discrepancy in the binary system V380 Cyg*

- Examination committee member (reader) of Tinatin Baratashvili June 2020  
*On the effect of grid stretching and AMR on inner heliospheric solar wind and CME evolution simulations*
- **Supervisor** of Joris Hermans Sept 2018 – June 2019  
*Testing stellar evolution with selected high-amplitude delta Scuti stars*
- **Supervisor** of Sven Nys Sept 2018 – June 2019  
*Asteroseismic modelling of gravity modes in selected intermediate-mass stars*
- **Co-supervisor** of Jordan Van Beeck Sept 2018 – June 2019  
*The influence of an interior magnetic field on gravity-mode oscillations of intermediate-mass stars*
- Examination committee member (reader) of Mathias Michielsens June 2018  
*Comparing oscillation frequencies of stars with a convective core: Impact of varying input physics*

### Master Level Courses and Modules

- **Lecturer, KU Leuven, Belgium** Sept 2022 – Aug 2023  
Responsible person for delivering MSc Asteroseismology course (6 ECTS).
- **Lecturer, KU Leuven, Belgium** Sept 2019 – Aug 2023  
Responsible person for delivering the MSc thesis defence preparation course.

### Undergraduate (Bachelor) Level Courses and Modules

- **Bachelor and master student projects, KU Leuven, Belgium** Sept 2017 – Aug 2023  
Supervision of multiple bachelor and master student projects in asteroseismology.
- **Guest Lecturer, University of Innsbruck, Austria** May 2021  
Lecture on massive stars for asteroseismology course of Prof. Konstanze Zwintz.
- **Module Examiner, KU Leuven, Belgium** Sept 2017 – July 2019  
Examiner for the Bachelor science communication and MSc Asteroseismology courses.
- **Lecturer, UCLan, UK** Sept 2016 – Jan 2017  
Responsible person for delivering first-year Bachelor 'Introduction to Statistics' (MA1861; 6 ECTS), 'Stellar Structure and Evolution' (AA1051; 6 ECTS), and organisation of second-year Bachelor astronomy laboratories at UCLan's Alston observatory (AP2060; 6 ECTS).

## XI. Scientific Conferences and Workshops

Attendance of **40** international conferences and workshops.

- TASC6/KASC13, Leuven, Belgium** 11 – 15 July 2022  
Chair of the LOC of the annual asteroseismic consortium meeting.
- IAUS361: Massive Stars Near and Far, Ballyconnell, Ireland** 8 – 13 May 2022
- KITP program, Santa Barbara, California, USA** 11 Oct – 17 Dec 2021  
I was an invited participant and was awarded a competitive FWO long stay abroad grant to cover the costs. This program also included a conference between 11-18 November at which I was an invited panellist speaker.
- TESS SciCon II, Virtual (hosted by MIT, USA)** 2 – 6 Aug 2021
- BRITE-related Science Meeting, Virtual (hosted by Innsbruck University, Austria)** 12 July 2021
- EAS 2021, Virtual (hosted by Leiden University, the Netherlands)** 28 June – 2 July 2021  
Co-Chair of the SOC of symposium 16 (S16) titled "Massive stars: birth, rotation, and chemical evolution".
- IAUS361: mini-symposium on massive stars, Virtual (hosted by DIAS, Ireland)** 3 – 7 May 2021



<b>OBA stars: Variability and Magnetic Fields</b> , <i>Virtual (hosted by St. Petersburg)</i> Invited speaker on the topic of asteroseismology of O and B stars.	26 – 30 April 2021
<b>Pulsations in Multiple Systems</b> , <i>Virtual (hosted by University of Surrey, UK)</i> Invited speaker on the topic of asteroseismology of OBAF stars.	18 – 22 Jan 2021
<b>MOBSTER-1</b> , <i>Virtual (hosted by University of Delaware, USA)</i> Co-Chair of the SOC for the first conference of the MOBSTER collaboration.	13 – 17 July 2020
<b>EAS 2020</b> , <i>Virtual (hosted by Leiden University, the Netherlands)</i> Chair of the SOC for the special session 5 (SS5) titled: “New insights of angular momentum transport in stellar interiors” at the EAS2020 conference.	29 June – 3 July 2020
<b>Stars and their Variability</b> , <i>Vienna, Austria</i> Invited speaker on the topic of asteroseismology of O and B stars.	19 – 23 Aug 2019
<b>TESS Sci Con I</b> , <i>MIT, Cambridge, USA</i>	29 July – 2 Aug 2019
<b>TASC5/KASC12</b> , <i>MIT, Cambridge, USA</i>	22 – 26 July 2019
<b>Stellar Hydro Days V</b> , <i>Exeter, UK</i>	24 – 28 June 2019
<b>STFC/MAMSIE mini-workshop</b> , <i>Leuven, Belgium</i>	2 – 4 April 2019
<b>Kepler/K2 Sci Con V</b> , <i>Glendale, California, USA</i>	4 – 8 March 2019
<b>TESS data workshop</b> , <i>KU Leuven, Belgium</i>	5 – 9 Nov 2018
<b>STFC/MAMSIE mini-workshop</b> , <i>Leuven, Belgium</i>	29 – 31 Oct 2018
<b>MASSIVE star meeting</b> , <i>Leuven, Belgium</i>	4 – 6 Oct 2018
<b>PHOST</b> , <i>Banyuls-sur-mer, France</i>	3 – 7 Sept 2018
<b>TASC4/KASC11</b> , <i>Aarhus University, Denmark</i> Invited speaker on the topic of asteroseismology of A and F stars. I was successful in my application for an FWO conference participation grant to cover the travel costs.	8 – 13 July 2018
<b>Statistics workshop</b> , <i>KU Leuven, Belgium</i>	11 June 2018
<b>STFC/MAMSIE mini-workshop</b> , <i>Newcastle University, UK</i>	5 – 8 June 2018
<b>Belgian contact group meeting</b> , <i>Brussels, Belgium</i>	4 June 2018
<b>MAMSIE/STFC workshop</b> , <i>KU Leuven, Belgium</i>	14 – 16 March 2018
<b>TESS data workshop</b> , <i>KU Leuven, Belgium</i>	6 – 8 Dec 2017
<b>MAMSIE/STFC workshop</b> , <i>KU Leuven, Belgium</i>	12 – 15 Sept 2017
<b>MESA Summer school</b> , <i>UCSB, California, USA</i>	14 – 18 Aug 2017
<b>TASC3/KASC10</b> , <i>University of Birmingham, UK</i>	17 – 21 July 2017
<b>STARS2016</b> , <i>Windermere, UK</i> Chair of the LOC celebrating the scientific contributions of Prof. Donald Kurtz.	11 – 15 Sept 2016
<b>TASC2/KASC9 workshop</b> , <i>Terceira-Açores, Portugal</i> My application for the defrayment of my registration fee was successful.	27 June – 1 July 2016
<b>National Astronomy Meeting (NAM)</b> , <i>Nottingham University, UK</i>	11 – 15 July 2016
<b>STFC spectroscopy school</b> , <i>Queen’s University Belfast, UK</i> My accommodation and subsistence costs were funded by STFC.	31 Aug – 4 Sept 2015
<b>KASC8/TASC1 workshop</b> , <i>Aarhus University, Denmark</i>	15 – 19 June 2015

I was successful in my application for an RAS travel grant for half the total costs.

**RAS specialist discussion meeting**, *RAS, London, UK*

8 May 2015

Invited speaker on the topic of pulsations in delta Scuti stars observed by Kepler.

**K2 data workshop**, *(Virtual) Aarhus University, Denmark*

10 – 11 Nov 2014

**Ecole Evry Schatzman 2014**, *Roscoff, France*

28 Sept – 3 Oct 2014

My accommodation and subsistence costs were funded by CNRS.

**CoRoT3/KASC7 meeting**, *Toulouse, France*

6 – 11 July 2014

My application for the defrayment of my registration fee was successful.

**Spectroscopy workshop**, *Aarhus University, Denmark*

19 – 23 May 2014

My application for an RAS travel grant for half the total costs was successful.

## XII. Conference Talks, Seminars and Colloquia

Total of **8 invited** and **11 contributed** talks at international conferences and **20** seminars/colloquia.

### Conference Talks

- IAUS361: Massive Stars Near and Far (Contributed), *Ballyconnell, Ireland* 10 May 2022
- Probes of Transport in Stars (**Invited**), *KITP, UCSB, USA* 15 Nov 2021
- Probes of Transport in Stars (**Invited**), *KITP, UCSB, USA* 12 Oct 2021
- TESS SciCon II (Contributed), *Virtual (hosted by MIT, USA)* 3 Aug 2021
- BRITE-related Science Meeting (**Invited**), *Virtual (hosted by Uni. Innsbruck, Austria)* 12 July 2021
- IAUS361 mini-symposium (Contributed), *Virtual (hosted by DIAS, Ireland)* 3 May 2021
- OBA stars: variability and magnetic fields (**Invited**), *Virtual (hosted by St. Petersburg)* 30 April 2021
- PIMMS workshop (**Invited**), *Virtual (hosted by University of Surrey, UK)* 18 Jan 2021
- Stars and their Variability (**Invited**), *Vienna, Austria* 19 Aug 2019
- TESS Sci Con I (Contributed), *MIT, Cambridge, USA* 30 July 2019
- TASC5/KASC12 (Contributed), *MIT, Cambridge, USA* 23 July 2019
- Stellar Hydro Days V (Contributed), *Exeter, UK* 26 June 2019
- Kepler/K2 Sci Con V (Contributed), *Glendale, California, USA* 7 March 2019
- MASSIVE star meeting (Contributed), *Leuven, Belgium* 4 Oct 2018
- PHOST conference (Contributed), *Banyuls-sur-mer, France* 6 Sept 2018
- TASC4/KASC11 workshop (**Invited**), *SAC, Aarhus University, Denmark* 13 July 2018
- STARS2016 conference (Contributed), *Windermere, UK* 14 Sept 2016
- KASC8/TASC1 workshop (Contributed), *SAC, Aarhus University, Denmark* 15 June 2015
- RAS specialist discussion meeting (**Invited**), *RAS, London, UK* 8 May 2015

### Seminars and Colloquia

- ESO, Santiago, Chile 9 Feb 2023
- (Virtual) Thüringer Landessternwarte (TLS) Tautenburg, Germany 24 Nov 2022



• Newcastle University, UK	2 Nov 2022
• (Virtual) Chinese University of Hong Kong	2 June 2022
• (Virtual) MPA, Germany	20 April 2022
• (Virtual) University of Geneva, Switzerland	14 April 2022
• (Virtual) Sheffield University, UK	6 Oct 2021
• KU Leuven, Belgium	1 Oct 2021
• (Virtual) Keele University, UK	19 May 2021
• (Virtual) Nicolaus Copernicus Astronomical Center, Poland	21 April 2021
• (Virtual) KITP, California, USA	16 Dec 2020
• KU Leuven, Belgium	22 March 2019
• Newcastle University, UK	6 June 2018
• Université Libre de Bruxelles, Belgium	19 April 2018
• KU Leuven, Belgium	2 March 2018
• Royal Observatory of Belgium, Belgium	16 Nov 2017
• University of Central Lancashire (UCLan), UK	15 June 2016
• SAC, Aarhus University, Denmark	2 May 2016
• University of Central Lancashire (UCLan), UK	15 July 2015
• Keele University, UK	4 Sept 2014

### XIII. Public Engagement and Outreach

I am passionate about public engagement and outreach in science, but particularly in astronomy. I have organised and assisted in over 50 outreach events for school students and amateur astronomer societies in the UK and Belgium reaching thousands of people. It is enjoyable and rewarding to engage with young students and members of the public and discuss astronomy at various levels. I am dedicated to continuing to provide high-calibre outreach activities throughout my career.

Whilst at UCLan in the UK, my outreach events included supervising visitors using the modern 0.7-m telescope at [Alston Observatory](#) and giving visitors an interactive tour of the night sky using the modern planetarium. I also visited primary and secondary schools to give talks and run astronomy-themed group activities.

Notable outreach activities I have performed whilst at KU Leuven include:

- Teaching Fellow of the [World Science Scholar](#) program of the World Science Foundation for the academic year 2022-2023, in which 60+ gifted and talented high school students from across the globe are selected to expand their mathematical abilities within inspiring university-level topics led by world-renowned scientists.
- Ongoing participant of the [Scientist@School](#) program, for which I provide astronomy-themed talks and activities for local Belgian schools, with classes up to approximately 30 students aged 14–18.
- Ongoing participant of the [Skype a Scientist](#) program, for which I regularly discuss astronomy online with international participants, including school classrooms and families.
- A series of short popular-science videos in collaboration with Huawei and Pint of Science Belgium for the [“5-minute science you never knew”](#) playlist of the ‘What Makes it Tick?’ YouTube channel.
- Interviewed for the Astronomer job profile for the UK [prospects career advice](#) website in 2021.

- Guest lecturer in stellar physics for the [Vereniging Voor Sterrenkunde Zomerschool](#) for 30–40 students aged 16–18 in August 2017, 2018 and 2020.
- Co-author of (Dutch) article for the September 2019 issue of the popular astronomy magazine [Heelal](#).
- Invited speaker at two [Pint of Science](#) events in Brussels on 7 and 21 May 2019, each with more than 100 attendees.
- Workshops on space exploration and the solar system at the KU Leuven [Kids University](#), for 30 students aged 8–13 on 5 May 2018 and 22 October 2022.
- Workshops on Exoplanets, Habitability and Host Star Variability for the [Ladies@Science](#) 2017 event, hosted at KU Leuven for 40 students aged 14–16 on 19 April 2017.

## XIV. Peer-Reviewed Scientific Publications

As of 7 March 2023, my citation metrics are:

**Google scholar:** 2650 citations and h-index of 33      **NASA ADS:** 2328 citations and h-index of 32

Total of **15** peer-reviewed papers as first-author, and **62** as co-author (of which **18** as second or third author).

### Submitted papers currently under review:

- N. Serebriakova, A. Tkachenko, S. Gebruers, **D. M. Bowman**, T. Van Reeth, L. Mahy, S. Burssens, L. IJspeert, H. Sana, C. Aerts, (*submitted, A&A*), 'The ESO UVES/FEROS Large Programs of TESS OB pulsators. I. Global stellar parameters from high-resolution spectroscopy'
- A. J. Frost, H. Sana, L. Mahy, G. Wade, J. Barron, J-B Le Bouquin, A. Mérand, F. R. N. Schneider, T. Shenar, R. H. Barba, **D. M. Bowman**, M. Fabry, A. Farhang, P. Marchant, N. I. Morrell, M. Munoz, J. V. Smoker (*submitted*), 'Observational evidence of mergers being a viable cause of magnetism in massive stars'
- Vink et al., ... **D. M. Bowman**, ..., (*submitted, A&A*), 'X-Shooting ULLYSES: Massive Stars at low metallicity. I. Survey Description'
- N. Vernekar, A. Subramaniam, V. V. Jadhav, **D. M. Bowman**, (*submitted, MNRAS*), 'Photometric variability of blue straggler stars in M67 with TESS and K2'
- W. R. Thompson, F. Herwig, P. R. Woodward, H. Mao, P. Denissenkov, **D. M. Bowman**, S. Blouin, (*submitted, MNRAS*), '3D hydrodynamic simulations of massive main-sequence stars. II. Convective excitation and spectra of internal gravity waves'
- R. Monier, E. Niemczura, D. W. Kurtz, S. Rappaport, **D. M. Bowman**, S. J. Murphy, Y. Lebreton, R. Stuik, M. Deal, T. Merle, T. Kiliçoğlu, M. Gebran, E. Le Ster, (*submitted, AJ*), 'The surface composition of six newly discovered chemically peculiar stars. Comparison to the HgMn stars  $\mu$  Lep and  $\beta$  Scl and the superficially normal B star  $\nu$  Cap'
- T. Shenar, G. Wade, P. Marchant, S. Bagnulo, J. Bodensteiner, **D. M. Bowman**, A. Gilkis, N. Langer, A. Nicholas-Chené, L. Oskinova, T. Van Reeth, H. Sana, N. St-Louis, A. Soares de Oliveira, H. Todt, S. Toonen, (*submitted*), 'A strongly magnetic super-Chandrasekhar mass helium star'
- R. Monier, **D. M. Bowman**, Y. Lebreton, M. Deal, (*submitted, ApJ*), 'The unexpected optical and ultraviolet variability of the standard star  $\alpha$  Sex (HD 87887)'
- S. Burssens, **D. M. Bowman**, M. Michielsen, S. Simón-Díaz, C. Aerts, V. Vanlaer, G. Banyard, N. Nardetto, R. H. D. Townsend, G. Handler, J. S. G. Mombarg, R. Vanderspek, G. Ricker, (*submitted*), 'Astero-seismology of the  $\beta$  Cep star HD 192575: a unique anchor of angular momentum transport in massive stars'

### Accepted papers currently in press:

- D. Pauli, L. M. Oskinova, W.-R. Hamann, **D. M. Bowman**, H. Todt, T. Shenar, A. A. C. Sander, C. Erba, V. M. A. Gómez-González, C. Kehrig, J. Klencki, R. Kuiper, A. Mehner, S. E. de Mink, M. S. Oey, V. Ramachandran, A. Schootemeijer, S. Reyer Serantes, A. Wofford, (*in press, A&A*), 'Spectroscopic and evolutionary analyses of the binary system AzV 14 outline paths towards the WR stage at low-metallicity'
- T. Van Reeth, C. Johnston, J. Southworth, J. Fuller, **D. M. Bowman**, L. Poniatoski, J. Van Beeck, (*in press, A&A*), 'Tidally perturbed g-mode pulsations in a sample of close eclipsing binaries'

### Published articles:

- C. Johnston, A. Tkachenko, T. Van Reeth, **D. M. Bowman**, K. Pavlovski, H. Sana, S. Sekaran, (2023), *A&A*, 670, A167, 'Tidal perturbations and geometric effects on the pulsations in the hierarchical triple system U Gru' [[ADS link](#)]

- **D. M. Bowman**, T. Z. Dorn-Wallenstein, (2022), A&A, 668, A134, '*Photometric detection of internal gravity waves in upper main-sequence stars. III. Comparison of amplitude spectrum fitting and Gaussian process regression using CELERITE2*' [\[ADS link\]](#)
- J. Southworth, **D. M. Bowman**, (2022), The Observatory, 142, 161-173, '*Rediscussion of eclipsing binaries. Paper X. The pulsating B-type system V1388 Orionis*' [\[ADS link\]](#)
- J. Tayar, F. D. Moyano, M. Soares-Furtado, A. Escorza, M. Joyce, S. L. Martell, R. A. García, S. N. Breton, S. Mathis, S. Mathur, V. Delsanti, S. Kiefer, S. Reffert, **D. M. Bowman**, T. Van Reeth, S. Shetye, C. Gehan, S. K. Grunblatt, (2022), ApJ, Volume 940, Issue 1, 23, '*Spinning up the Surface: Evidence for Planetary Engulfment or Unexpected Angular Momentum Transport?*' [\[ADS link\]](#)
- O. Kobzar, V. Khalack, D. Bohlender, G. Mathys, M. Shultz, **D. M. Bowman**, E. Paunzen, C. Lovekin, A. David-Uraz, J. Sikora, P. Lampens, O. Richard, (2022), MNRAS Volume 517, Issue 4, 5340–5357, '*Analysis of eight magnetic chemically peculiar stars with rotational modulation*' [\[ADS link\]](#)
- S. Gebruers, A. Tkachenko, **D. M. Bowman**, T. Van Reeth, S. Burssens, L. IJspeert, L. Mahy, I. Straumit, M. Xiang, H.-W. Rix, C. Aerts, (2022), A&A, 665, A36, '*Analysis of high-resolution FEROS spectroscopy for a sample of variable B-type stars assembled from TESS photometry*' [\[ADS link\]](#)
- L. Mahy, H. Sana, T. Shenar, M. Abdul-Masih, G. Banyard, J. Bodensteiner, **D. M. Bowman**, K. Dsilva, M. Fabry, C. Hawcroft, N. Langer, P. Marchant, T. Van Reeth, C. Eldridge, (2022), A&A, 664 A159, '*Identifying quiescent compact objects in massive Galactic single-lined spectroscopic binaries*' [\[ADS link\]](#)
- Z. T. Spetsieri, P. Boumis, A. Chiotellis, S. Akas, S. Derlopa, S. Shetye, D. M.-A. Meyer, **D. M. Bowman**, V. V. Gvaramadze, (2022), MNRAS Volume 515, Issue 1, 1544–1556, '*Discovery of an optical cocoon tail behind the runaway HD 185806*' [\[ADS link\]](#)
- J. A. Toalá, **D. M. Bowman**, T. Van Reeth, H. Todt, K. Dsilva, T. Shenar, G. Koenigsberger, S. Estrada-Dorado, L. M. Oskinova, W.-R. Hamann, (2022), MNRAS, Volume 514, Issue 1, 2269–2277, '*Multiple variability time-scales of the early nitrogen-rich Wolf-Rayet star WR7*' [\[ADS link\]](#)
- J. Southworth, **D. M. Bowman**, (2022), MNRAS, Volume 513, Issue 3, pp. 3191-3209, '*High-mass pulsators in eclipsing binaries observed using TESS*' [\[ADS link\]](#)
- T. Van Reeth, J. Southworth, J. Van Beeck, **D. M. Bowman**, (2022), A&A, 659, A177, '*V456 Cyg: an eclipsing binary with tidally perturbed g-mode pulsations*' [\[ADS link\]](#)
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- K. Pavlovski, C. A. Hummel, A. Tkachenko, A. Dervişoğlu, C. Kayhan, R. T. Zavala, D. J. Hutter, C. Tycner, T. Şahin, J. Audenaert, R. Baeyens, J. Bodensteiner, **D. M. Bowman**, S. Gebruers, N. E. Janssen, J. S. G. Mombarg, (2022), A&A, 658, A92, '*Dynamical parallax, physical parameters and evolutionary status of the components of the bright eclipsing binary  $\alpha$  Draconis*' [\[ADS link\]](#)
- A. Elliott, N. D. Richardson, H. Pablo, A. F. J. Moffat, **D. M. Bowman**, N. Ibrahim, G. Handler, C. Lovekin, A. Popowicz, N. St-Louis, G. A. Wade, K. Zwintz, (2022), MNRAS, Volume 509, Issue 3, 4246–4255, '*Five years of BRITE-Constellation photometry of the prototypical luminous blue variable P Cygni: constraining the stochastic low-frequency variability*' [\[ADS link\]](#)

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- D. L. Holdsworth, M. S. Cunha, D. W. Kurtz, V. Antoci, D. R. Hey, **D. M. Bowman**, O. Kobzar, D. L. Buzasi, O. Kochukhov, E. Niemczura, D. Ozuyar, F. Shi, R. Szabó, A. Samadi-Ghadim, Zs. Bognár, L. Fox-Machado, V. Khalack, M. Lares-Martiz, C. C. Lovekin, P. Mikołajczyk, D. Mkrtichian, J. Pascual-Granado, E. Paunzen, T. Richey-Yowell, Á. Sódor, J. Sikora, T. Z. Yang, E. Brunsden, A. David-Uraz, A. Derekas, A. García Hernández, J. A. Guzik, N. Hatamkhani, R. Handberg, T. S. Lambert, P. Lampens, S. J. Murphy, R. Monier, K. R. Pollard, P. Quitral-Manosalva, A. Ramón-Ballesta, B. Smalley, I. Stateva, R. Vanderspek, (2021), MNRAS, Volume 506, Issue 1, 1073–1110, '*TESS Cycle 1 observations of roAp stars with 2-min cadence data*' [\[ADS link\]](#)
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- W. W. Weiss, K. Zwintz, R. Kuschnig, G. Handler, A. F. W. Moffat, D. Baade, **D. M. Bowman**, T. Granzer, T. Kallinger, O. F. Koudelka, C. Lovekin, C. Neiner, H. Pablo, A. Pigulski, A. Popowicz, T. Ramiaramanantsoa, S. Rucinski, K. Strassmeier, G. Wade, (2021), Universe 7, 199, '*Space Photometry with BRITE-Constellation*' [\[ADS link\]](#)
- M. Michielsen, C. Aerts, **D. M. Bowman**, (2021), A&A 650, A175, '*Probing the temperature gradient in the core boundary layer of stars with gravito-inertial modes: the case of KIC 7760680*' [\[ADS link\]](#)
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- C. Johnston, N. Aimar, M. Abdul-Masih, **D. M. Bowman**, T. White, C. Hawcroft, H. Sana, S. Sekeran, K. Dsilva, A. Tkachenko, C. Aerts, (2021), MNRAS 503, Issue 1, 1124–1137, '*Characterization of the variability in the O+B eclipsing binary HD 165246*' [\[ADS link\]](#)
- J. Southworth, **D. M. Bowman**, K. Pavlovski, (2021), MNRAS Letters 501, Issue 1, L65–L70, '*A beta Cephei pulsator and a changing orbital inclination in the high-mass eclipsing binary system VV Orionis*' [\[ADS link\]](#)

- M. G. Pedersen, C. Aerts, P. I. Pápics, M. Michielsen, S. Gebruers, T. M. Rogers, G. Molenberghs, S. Burssens, S. Garcia, **D. M. Bowman**, (2021), *Nature Astronomy*, Volume 5, 715–722, ‘*Internal mixing of rotating stars inferred from dipole gravity modes*’ [[ADS link](#)]
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**2020:** 2 first author and 10 co-author publications

- S. Sekaran, A. Tkachenko, M. Abdul-Masih, A. Prša, C. Johnston, D. Huber, S. J. Murphy, G. Banyard, A. W. Howard, H. Isaacson, **D. M. Bowman**, C. Aerts, (2020), *A&A* 643, A162, ‘*Tango of celestial dancers: A sample of detached eclipsing binary systems containing g-mode pulsating components. A case study of KIC9850387*’ [[ADS link](#)]
- **D. M. Bowman**, (2020), *Frontiers in Astronomy and Space Sciences* 7, 70, ‘*Asteroseismology of high-mass stars: new insights of stellar interiors with space telescopes*’ [[ADS link](#)]
- J. Southworth, **D. M. Bowman**, A. Tkachenko, K. Pavlovski, (2020), *MNRAS Letters* 497, Issue 1, L19–L23, ‘*Discovery of  $\beta$  Cep pulsations in the eclipsing binary V453 Cygni*’ [[ADS link](#)]
- J. Bodensteiner, T. Shenar, L. Mahy, M. Fabry, P. Marchant, M. Abdul-Masih, G. Banyard, **D. M. Bowman**, K. Dsilva, A. J. Frost, C. Hawcroft, M. Reggiani, H. Sana, (2020), *A&A* 641, A43, ‘*Is HR 6819 a triple system containing a black hole? An alternative explanation*’ [[ADS link](#)]
- L. Horst, P. V. F. Edelmann, R. Andrásy, F. K. Röpké, **D. M. Bowman**, C. Aerts, R. P. Ratnasingam, (2020), *A&A* 641, A18, ‘*Fully compressible simulations of waves and core convection in main-sequence stars*’ [[ADS link](#)]
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- A. Tkachenko, K. Pavlovski, C. Johnston, C. Aerts, M. G. Pedersen, M. Michielsen, **D. M. Bowman**, J. Southworth, V. Tsymbal, (2020), *A&A* 637, A60, ‘*The mass discrepancy in intermediate- and high-mass eclipsing binaries: The need for higher convective core masses*’ [[ADS link](#)]
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- V. Antoci, M. Cunha, **D. M. Bowman**, S. J. Murphy, D. W. Kurtz, T. R. Bedding, C. Borre, S. Christophe, J. Daszyńska-Daszkiewicz, L. Fox-Machado, A. García Hernández, H. Ghasemi, R. Handberg, H. Hansen, A. Hasanzadeh, G. Houdek, C. Johnston, A. B. Justesen, F. Kahraman Alicavus, F. Kotysz, D. Latham, J. Matthews, J. Mønster, E. Niemczura, E. Paunzen, J. P. Sanchez Arias, A. Pigulski, J. Pepper, T. Richey-Yowell, H. Safari, S. Seager, B. Smalley, T. Shutt, A. Sódor, J.-C. Suárez, A. Tkachenko, T. Wu, K. Zwintz, S. Barceló Forteza, E. Brunsden, Z. Bognár, D. Buzasi, S. Chowdhury, P. De Cat, J. Evans, Z. Guo, J. A. Guzik, N. Jevtic, P. Lampens, M. Lares Martiz, C. Lovekin, G. Li, G. M. Mirouh, D. Mkrtichian, M. J. P. F. G. Monteiro, J. Nemec, R. Ouazzani, J. Pascual-Granado, D. Reese, M. Rieutord, J. R. Rodon, M. Skarka, P. Sowicka, I. Stateva, R. Szabó, W. W. Weiss, (2019), MNRAS 490, Issue 3, 4040–4059, ‘*The first view of  $\delta$  Sct and  $\gamma$  Dor stars with the TESS mission*’ [[ADS link](#)]
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- B. J. S. Pope, G. R. Davies, K. Hawkins, T. R. White, A. Stokholm, A. Bieryla, D. W. Latham, M. Lucey, C. Aerts, S. Aigrain, V. Antoci, T. R. Bedding, **D. M. Bowman**, A. Chontos, G. A. Esquerdo, D. Huber, P. Jofré, S. J. Murphy, T. Van Reeth, V. Silva Aguirre, J. Yu, (2019), ApJS 244, Issue 1, 18, ‘*The Kepler Smear Campaign: Light curves for 102 Very Bright Stars*’ [[ADS link](#)]
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- V. Prat, S. Mathis, B. Buysschaert, J. Van Beeck, **D. M. Bowman**, C. Aerts, C. Neiner, (2019), A&A 627, A64, ‘*Period spacings of gravity modes in rapidly rotating magnetic stars. I. Axisymmetric fossil field with poloidal and toroidal components*’ [[ADS link](#)]

- **D. M. Bowman**, S. Burssens, M. G. Pedersen, C. Johnston, C. Aerts, B. Buysschaert, M. Michielsen, A. Tkachenko, T. M. Rogers, P. V. F. Edelmann, R. P. Ratnasingam, S. Simón-Díaz, N. Casto, E. Moravveji, B. J. S. Pope, T. R. White, P. De Cat, (2019), *Nature Astronomy*, Volume 3, Number 8, 760–765, ‘*Low-frequency gravity waves in blue supergiants revealed by high-precision space photometry*’ [\[ADS link\]](#)
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