

Dominic M. Bowman

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

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I. Personal Statement

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 and actively develop teaching at the BSc, MSc and PhD level, and outreach 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 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 May 2020, I was awarded the prestigious [KU Leuven Research Council Award](#) in Science, Engineering and Technology for my breakthrough research in asteroseismology of massive stars. In November 2020, I began a prestigious and competitive 3-yr FWO research fellowship based at KU Leuven.

II. Education

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

FWO Senior Postdoctoral Fellowship

1 Nov 2020 to 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 to 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

FWO Long Stay Abroad

Oct - Dec 2021

I was awarded a competitive FWO grant for a long research stay abroad to cover all costs for my visit to KITP, California, USA for 3 months in 2021, for a total of approximately €5000.

KU Leuven Research Council Award (POR)

May 2020

This prestigious and highly-competitive prize for postdoctoral researchers within KU Leuven was awarded for my research in massive star asteroseismology, and 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

I have been successful in numerous travel bursary applications to external funding bodies for attending international conferences, which include STFC and RAS in the UK, CNRS in France and FWO in Belgium. The combined total of these travel grants is approximately €5000.

V. Conference Organisation

TASC6/KASC13, Leuven, Belgium

11 – 15 July 2022

Chair of the LOC for the TASC6/KASC13 conference of the asteroseismic community, which will be held in Leuven and attract ~200 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.

MOBSTER1, 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. Format was changed to a virtual conference because of the COVID-19 pandemic.

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

29 June – 3 July 2020

Chair of the SOC of the special session titled "New insights of angular momentum transport in stellar interiors" held on 1 June during the EAS 2020 meeting, which had more than 100 participants. Format was changed to a virtual conference because of the COVID-19 pandemic.

STARS2016, Windermere, UK

11 – 15 Sept 2016

Principal organiser (Chair of the LOC) for the STARS2016 conference which celebrated the scientific career of Prof. Donald Kurtz and had more than 75 participants. The budget was approximately €50 000, and successful grant applications included €3500 from the RAS and €8000 from UCLan for this meeting.

VI. Personal Training

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

12 Aug 2021

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

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

16 Nov 2020

Seminars and training session 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

WG Chair, Arago Space Mission Jan 2022 to date
Chair of the 'Hot (BA) Stars' working group for the proposed M7 ESA space mission on UV+visible spectropolarimetry.

Review Editor, Frontiers Feb 2021 – date
Editorial board member and [Review Editor](#) for the journals '*Frontiers in Astronomy and Space Sciences*' and '*Frontiers in Physics*'.

ULLYSES WG12 chair Dec 2020 – date
Point of contact (chair) of WG12: pulsations of ULLYSES targets and [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 P.I. Alex David-Uraz and co-P.I. 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.

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.

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 [SHOC instrument team](#) at SAAO as the go-to reduction pipeline.

Scientific co-PI of the 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.

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

Junior Member of 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

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 (*106.2158.001; 106.2158.003; 106.2158.003; 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 two TESS Guest Investigator proposals obtaining high-precision and short-cadence time series photometry of massive stars in cycle 3 in 2019 (*G03059; 1058 stars; PI Bowman*) and cycle 4 in 2020 (*G04074; 1618 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 δ 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_{eff} values for 23 δ Sct stars observed by *Kepler*.

X. Teaching and Supervision Experience

PhD theses, KU Leuven, Belgium

- Examination committee (jury) member of Camilla Scolini May 2020
Magnetised Coronal Mass Ejections: evolution from the Sun to 1 AU and geo-effectiveness
- 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
- Supervisor of Siemen Burssens Sept 2018 – date
Massive star asteroseismology with K2 and TESS: Instability strips and in-depth modelling of the β Cep star HD 192575
- 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 Stijn Rutten Sept 2021 – date
Photometry of saturated stars with MAIA: preparing for PLATO
- 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

- **Module Tutor, KU Leuven, Belgium** Sept 2022 to Sept 2023
Responsible Lecturer for delivering MSc Asteroseismology course.
- **Module Tutor, KU Leuven, Belgium** Sept 2019 – date
Responsible Lecturer for delivering the MSc thesis defence preparation course.

Undergraduate (Bachelor) Level Courses and Modules

- **Bachelor and master student projects, KU Leuven, Belgium** Sept 2017 – date
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.
- **Module tutor, UCLan, UK** Sept 2016 – Jan 2017
Responsible Lecturer of bachelor courses in statistics, astronomy, mathematics, and supervision of astronomy laboratories.

XI. Scientific Conferences and Workshops

- TASC6/KASC13, Leuven, Belgium** 11 – 15 July 2022
Chair of the LOC of the annual asteroseismic consortium meeting.
- IAU361: Massive Stars Near and Far, Ballyconnell, Ireland** 8 – 13 May 2022
- KITP program, Santa Barbara, California, USA** 11 Oct – 17 Dec 2021
I was successful in my application for an 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”.
- IAU361 mini-symposium on massive stars, Virtual (hosted by DIAS, Ireland)** 3 – 7 May 2021
- OBA stars: Variability and Magnetic Fields, Virtual (hosted by St. Petersburg)** 26 – 30 April 2021
Invited speaker on the topic of asteroseismology of O and B stars.
- Pulsations in Multiple Systems, Virtual (hosted by University of Surrey, UK)** 18 – 22 Jan 2021
Invited speaker on the topic of asteroseismology of OBAF stars.
- MOBSTER-1, Virtual (hosted by University of Delaware, USA)** 13 – 17 July 2020
Co-Chair of the SOC for the first conference of the MOBSTER collaboration.
- EAS 2020, Virtual (hosted by Leiden University, the Netherlands)** 29 June – 3 July 2020
Chair of the SOC for the special session 5 (SS5) titled: “New insights of angular momentum transport in stellar interiors” at the EAS2020 conference.
- Stars and their Variability, Vienna, Austria** 19 – 23 Aug 2019
Invited speaker on the topic of asteroseismology of O and B stars.
- TESS Sci Con I, MIT, Cambridge, USA** 29 July – 2 Aug 2019
- TASC5/KASC12, MIT, Cambridge, USA** 22 – 26 July 2019
- Stellar Hydro Days V, Exeter, UK** 24 – 28 June 2019
- STFC/MAMSIE mini-workshop, Leuven, Belgium** 2 – 4 April 2019
- Kepler/K2 Sci Con V, Glendale, California, USA** 4 – 8 March 2019
- TESS data workshop, KU Leuven, Belgium** 5 – 9 Nov 2018

STFC/MAMSIE mini-workshop , <i>Leuven, Belgium</i>	29 – 31 Oct 2018
MASSIVE star meeting , <i>Leuven, Belgium</i>	4 – 6 Oct 2018
PHOST , <i>Banyuls-sur-mer, France</i>	3 – 7 Sept 2018
TASC4/KASC11 , <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
Statistics workshop , <i>KU Leuven, Belgium</i>	11 June 2018
STFC/MAMSIE mini-workshop , <i>Newcastle University, UK</i>	5 – 8 June 2018
Belgian contact group meeting , <i>Brussels, Belgium</i>	4 June 2018
MAMSIE/STFC workshop , <i>KU Leuven, Belgium</i>	14 – 16 March 2018
TESS data workshop , <i>KU Leuven, Belgium</i>	6 – 8 Dec 2017
MAMSIE/STFC workshop , <i>KU Leuven, Belgium</i>	12 – 15 Sept 2017
MESA Summer school , <i>UCSB, California, USA</i>	14 – 18 Aug 2017
TASC3/KASC10 , <i>University of Birmingham, UK</i>	17 – 21 July 2017
STARS2016 , <i>Windermere, UK</i> Chair of the LOC celebrating the scientific contributions of Prof. Donald Kurtz.	11 – 15 Sept 2016
TASC2/KASC9 workshop , <i>Terceira-Açores, Portugal</i> My application for the defrayment of my registration fee was successful.	27 June – 1 July 2016
National Astronomy Meeting (NAM) , <i>Nottingham University, UK</i>	11 – 15 July 2016
STFC spectroscopy school , <i>Queen's University Belfast, UK</i> My accommodation and subsistence costs were funded by STFC.	31 Aug – 4 Sept 2015
KASC8/TASC1 workshop , <i>Aarhus University, Denmark</i> I was successful in my application for an RAS travel grant for half the total costs.	15 – 19 June 2015
RAS specialist discussion meeting , <i>RAS, London, UK</i> Invited speaker on the topic of pulsations in delta Scuti stars observed by Kepler.	8 May 2015
K2 data workshop , <i>(Virtual) Aarhus University, Denmark</i>	10 – 11 Nov 2014
Ecole Evry Schatzman 2014 , <i>Roscoff, France</i> My accommodation and subsistence costs were funded by CNRS.	28 Sept – 3 Oct 2014
CoRoT3/KASC7 meeting , <i>Toulouse, France</i> My application for the defrayment of my registration fee was successful.	6 – 11 July 2014
Spectroscopy workshop , <i>Aarhus University, Denmark</i> My application for an RAS travel grant for half the total costs was successful.	19 – 23 May 2014

XII. Conference Talks, Seminars and Colloquia

Conferences Talks

- Transport in Stellar Interiors (**Invited**), *KITP, UCSB, USA* 15 Nov 2021
- Transport in Stellar Interiors (**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
- IAU 361 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

- (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 many outreach events for school students and amateur astronomer societies in the UK and Belgium. Whilst at UCLan in the UK, this included using the modern 0.7-m telescope at Alston observatory, at which visitors were given 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. 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.

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

- Ongoing participant of the [Scientist@School](#) program, for which I provide astronomy-themed talks and activities for local Belgian schools.
- 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.
- A 90-min workshop on space exploration and the solar system at the KU Leuven [Kids University 2018](#), for 30 students aged 8–12 on 5 May 2018.
- 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 4 April 2022, my citation metrics are:

Google scholar: 1911 citations and h-index of 30

NASA ADS: 1720 citations and h-index of 29

Submitted papers currently under review:

- 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, (*submitted to MNRAS*), 'Multiple variability time-scales of the early nitrogen-rich Wolf-Rayet star WR7'
- **D. M. Bowman**, T. Z. Dorn-Wallenstein, (*submitted to A&A*), 'Photometric detection of internal gravity waves in upper main-sequence stars. III. Comparison of Gaussian processes and amplitude spectrum fitting'
- 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, (*submitted to A&A*), 'Identifying quiescent compact objects in massive Galactic single-lined spectroscopic binaries'
- S. Burssens, **D. M. Bowman**, M. Michielsen, S. Simón-Díaz, C. Aerts, G. Banyard, N. Nardetto, R. H. D. Townsend, J. S. G. Mombarg, G. Ricker, (*submitted*), 'Asteroseismology of the β Cep star HD 192575: a unique anchor of angular momentum transport in massive stars'

Accepted papers currently in press:

- J. Southworth, **D. M. Bowman**, (*in press, MNRAS*), 'High-mass pulsators in eclipsing binaries observed using TESS'

Published articles:

- 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](#)]
- D. Lecoanet, **D. M. Bowman**, T. Van Reeth, (2022), MNRAS Letters, Volume 512, Issue 1, L16-L20, 'Asteroseismic inference of the near-core magnetic field strength in the main-sequence B star HD 43317' [[ADS link](#)]
- **D. M. Bowman**, B. Vandenbussche, H. Sana, A. Tkachenko, G. Raskin, T. Delabie, B. Vandoren, P. Royer, S. Garcia, T. Van Reeth, and the CubeSpec collaboration, (2022), A&A, 658, A96, 'The CubeSpec space mission. I. Asteroseismology of massive stars from time-series optical spectroscopy: Science requirements and target list prioritisation' [[ADS link](#)]
- 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 α 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](#)]

2021: 2 first author and 12 co-author publications

- **D. M. Bowman** and M. Michielsen, (2021), A&A, 656, A158, 'Towards a systematic treatment of observational uncertainties in forward asteroseismic modelling of gravity-mode pulsators' [[ADS link](#)]
- J. Van Beeck, **D. M. Bowman**, M. G. Pedersen, T. Van Reeth, T. Van Hoolst, C. Aerts, (2021), A&A, 655, A59, 'Detection of non-linear resonances among gravity modes of slowly pulsating B stars: Results from five iterative pre-whitening strategies' [[ADS link](#)]

- J. Audenaert, J. S. Kuszlewicz, R. Handberg, A. Tkachenko, D. Armstrong, M. Hon, R. Kgoadi, M. N. Lund, K. J. Bell, L. Bugnet, **D. M. Bowman**, C. Johnston, R. A. García, D. Stello, L. Molnár, E. Plachy, D. Buzasi, C. Aerts, and the T'DA collaboration, (2021), *AJ*, Volume 162, Issue 5, id.209, '*TESS Data for Asteroseismology (T'DA) Stellar Variability Classification Pipeline: Set-Up and Application to the Kepler Q9 Data*' [[ADS link](#)]
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- A. David-Uraz, M. E. Shultz, V. Petit, **D. M. Bowman**, C. Erba, R. A. Fine, C. Neiner, H. Pablo, J. Sikora, A. ud-Doula, G. A. Wade, (2021), *MNRAS* 504, Issue 4, 4841–4849, '*MOBSTER – IV. Detection of a new magnetic B-type star from follow-up spectropolarimetric observations of photometrically selected candidates*' [[ADS link](#)]
- **D. M. Bowman**, J. Hermans, J. Daszyńska-Daszkiewicz, D. L. Holdsworth, A. Tkachenko, S. J. Murphy, B. Smalley, D. W. Kurtz, (2021), *MNRAS* 504, Issue 3, 4039–4053 '*KIC 5950759: a high-amplitude δ Sct star with amplitude and frequency modulation near the terminal age main sequence*' [[ADS link](#)]
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- 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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- T. Steindl, K. Zwintz, **D. M. Bowman**, (2021), *A&A* 645, A119, '*Tidally perturbed pulsations in the pre-main sequence δ Scuti binary RS Cha*' [[ADS link](#)]

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 β 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. Röpke, **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](#)]
- **D. M. Bowman**, S. Burssens, S. Simón-Díaz, P. V. F. Edelmann, T. M. Rogers, L. Horst, F. K. Röpke, C. Aerts, (2020), A&A 640, A36, '*Photometric detection of internal gravity waves in upper main-sequence stars. II. Combined TESS photometry and high-resolution spectroscopy*' [[ADS link](#)]
- T. Shenar, J. Bodensteiner, M. Abdul-Masih, M. Fabry, L. Mahy, P. Marchant, G. Banyard, **D. M. Bowman**, K. Dsilva, C. Hawcroft, M. Reggiani, H. Sana, (2020), A&A Letters 639, L6, '*The “hidden” companion in LB-1 unveiled by spectral disentangling*' [[ADS link](#)]
- S. Burssens, S. Simón-Díaz, **D. M. Bowman**, G. Holgado, M. Michielsen, A. de Burgos, N. Castro, R. H. Barbá, C. Aerts, (2020), A&A 639, A81, '*Variability of OB stars from TESS southern Sectors 1-13 and high-resolution IACOB and OWN spectroscopy*' [[ADS link](#)]
- J. Van Beeck, V. Prat, T. Van Reeth, S. Mathis, **D. M. Bowman**, C. Aerts, (2020), A&A 638, A149, '*Detecting axisymmetric magnetic fields using gravity modes in intermediate-mass stars*' [[ADS link](#)]
- 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](#)]
- M. Abdul-Masih, G. Banyard, J. Bodensteiner, E. Bordier, **D. M. Bowman**, K. Dsilva, M. Fabry, C. Hawcroft, L. Mahy, P. Marchant, G. Raskin, M. Reggiani, T. Shenar, A. Tkachenko, H. Van Winckel, L. Vermeylen, H. Sana, (2020), Nature, Volume 580, Issue 7805, E11–E15, '*On the signature of a 70-solar-mass black hole in LB-1*' [[ADS link](#)]
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2019: 4 first author and 14 co-author publications

- 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,

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 - **D. M. Bowman**, C. Johnston, A. Tkachenko, D. Mkrichian, K. Gunsriiwat, C. Aerts, (2019), ApJL 883, Issue 1, L26, ‘*Discovery of tidally-perturbed pulsations in the eclipsing binary system U Gru: a crucial system for tidal asteroseismology*’ [\[ADS link\]](#)
 - **D. M. Bowman** and D. L. Holdsworth, (2019), A&A 629, A21, ‘*Adaptive elliptical aperture photometry: a software package for high-cadence ground-based photometry. I. Application to rapid oscillators observed from SAAO*’ [\[ADS link\]](#)
 - J. Sikora, A. David-Uraz, S. Chowdhury, **D. M. Bowman**, G. A. Wade, V. Khalack, O. Kobzar, O. Kochukhov, C. Neiner, E. Paunzen, (2019), MNRAS 487, Issue 4, 4695–4710, ‘*MOBSTER – II. Identification of rotationally variable A stars observed with TESS in sectors 1–4*’ [\[ADS link\]](#)
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 - R. Manick, D. Kamath, H. Van Winkel, A. Jorissen, S. Sekaran, **D. M. Bowman**, G.-M. Oomen, J. Kluska, D. Bollen, C. Waelkens, (2019), A&A 628, A40, ‘*Spectroscopic binaries RV Tauri and DF Cygni*’ [\[ADS link\]](#)
 - A. David-Uraz, C. Neiner, J. Sikora, **D. M. Bowman**, V. Petit, S. Chowdhury, G. Handler, M. Pergeorelis, M. Cantiello, C. Erba, Z. Keszthelyi, V. Khalack, O. Kobzar, O. Kochukhov, J. Labadie-Bartz, R. MacInnis, S. P. Owocki, H. Pablo, M. E. Shultz, A. ud-Doula, G. A. Wade, and the MOBSTER Collaboration, (2019), MNRAS 487, Issue 1, 304–317, ‘*Magnetic OB[A] stars with TESS: probing their evolutionary and rotational properties (MOBSTER) - I. First-light observations of known magnetic B and A stars*’ [\[ADS link\]](#)
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 - J. S. G. Mombarg, T. Van Reeth, M. G. Pedersen, G. Molenberghs, **D. M. Bowman**, C. Johnston, A. Tkachenko, C. Aerts, (2019), MNRAS 485, Issue 3, 3248–3263, ‘*Asteroseismic masses, ages and core properties of γ Doradus stars using the asymptotic period spacing and spectroscopy*’ [\[ADS link\]](#)
 - P. V. F. Edelmann, R. P. Ratnasingam, M. G. Pedersen, **D. M. Bowman**, V. Prat, T. M. Rogers, (2019), ApJ 876, Issue 1, 4–24, ‘*Three-dimensional simulations of massive stars I. wave generation and propagation*’ [\[ADS link\]](#)

- G. Handler, A. Pigulski, J. Daszyńska-Daszkiewicz, A. Irrgang, D. Kilkeny, Z. Guo, N. Przybilla, F. Kahraman Aliçavuş, T. Kallinger, J. Pascual-Granado, E. Niemczura, T. Róžański, S. Chowdhury, D. L. Buzasi, G. M. Mirouh, **D. M. Bowman**, C. Johnston, M. G. Pedersen, S. Simón-Díaz, E. Moravveji, K. Gazeas, P. De Cat, R. K. Vanderspek, G. R. Ricker, (2019), *ApJL* 873, Issue 1, L4, ‘*Asteroseismology of massive stars with the TESS mission: the runaway β Cep pulsator PHL 346 = HN Aqr*’ [\[ADS link\]](#)
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- C. Johnston, A. Tkachenko, C. Aerts, G. Molenberghs, **D. M. Bowman**, M. G. Pedersen, B. Buysschaert, P. I. Pápics, (2019), *MNRAS* 482, Issue 1, 1231–1246, ‘*Binary Asteroseismic Modelling: isochrone-cloud methodology and application to Kepler gravity mode pulsators*’ [\[ADS link\]](#)
- **D. M. Bowman**, C. Aerts, C. Johnston, M. G. Pedersen, T. M. Rogers, P. V. F. Edelmann, S. Simón-Díaz, T. Van Reeth, B. Buysschaert, A. Tkachenko, S. A. Triana, (2019), *A&A* 621, A135, ‘*Photometric detection of internal gravity waves in upper main-sequence stars. I. Methodology and application to CoRoT targets*’ [\[ADS link\]](#)

2018: 2 first author and 8 co-author publications

- D. L. Holdsworth, M. S. Cunha, H. Shibahashi, D. W. Kurtz, **D. M. Bowman**, (2018), *MNRAS* 480, Issue 3, 2976–2984, ‘*K2 observations of the rapidly oscillating Ap star 33 Lib (HD 137949): new frequencies and unique non-linear interactions*’ [\[ADS link\]](#)
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- T. Van Reeth, J. S. G. Mombarg, S. Mathis, A. Tkachenko, J. Fuller, **D. M. Bowman**, B. Buysschaert, C. Johnston, A. García Hernández, J. Goldstein, R. H. D. Townsend, C. Aerts, (2018), *A&A* 618, A24, ‘*Sensitivity of gravito-inertial modes to differential rotation in intermediate-mass main-sequence stars*’ [\[ADS link\]](#)
- B. Buysschaert, C. Neiner, A. J. Martin, C. Aerts, **D. M. Bowman**, M. E. Oksala, T. Van Reeth, (2018), *MNRAS* 478, Issue 2, 2777–2793, ‘*Detection of magnetic fields in chemically peculiar stars observed with the K2 space mission*’ [\[ADS link\]](#)
- B. Buysschaert, C. Aerts, **D. M. Bowman**, C. Johnston, T. Van Reeth, M. G. Pedersen, C. Neiner, (2018), *A&A* 616, A77, ‘*Forward seismic modeling of the pulsating magnetic B-type star HD 43317*’ [\[ADS link\]](#)
- **D. M. Bowman**, B. Buysschaert, C. Neiner, P. I. Pápics, M. E. Oksala, C. Aerts, (2018), *A&A* 616, A77, ‘*K2 space photometry reveals rotational modulation and stellar pulsations in chemically peculiar A and B stars*’ [\[ADS link\]](#)
- C. Aerts, G. Molenberghs, M. Michielsen, M. G. Pedersen, R. Björklund, C. Johnston, J. S. G. Mombarg, **D. M. Bowman**, B. Buysschaert, P. I. Pápics, S. Sekaran, J. O. Sundqvist, A. Tkachenko, K. Truyaert, T. Van Reeth, E. Vermeyen, (2018), *ApJS* 237, 15–46, ‘*Forward asteroseismic modeling of stars with a convective core from gravity-mode oscillations: parameter estimation and stellar model selection*’ [\[ADS link\]](#)
- **D. M. Bowman** and D. W. Kurtz, (2018), *MNRAS* 476, Issue 3, 3169–3184, ‘*Characterizing the observational properties of δ Sct stars in the era of space photometry from the Kepler mission*’ [\[ADS link\]](#)
- C. Aerts, **D. M. Bowman**, S. Simón-Díaz, B. Buysschaert, C. Johnston, E. Moravveji, P. G. Beck, P. De Cat, S. Triana, S. Aigrain, N. Castro, D. Huber, T. White, (2018), *MNRAS* 476, Issue 1, 1234–1241, ‘*K2 photometry and HERMES spectroscopy of the blue supergiant ρ Leo: rotational wind modulation and low-frequency waves*’ [\[ADS link\]](#)

- D. L. Holdsworth, H. Saio, **D. M. Bowman**, D. W. Kurtz, R. R. Sefako, M. Joyce, T. Lambert, B. Smalley, (2018), MNRAS 476, Issue 1, 601–616, ‘*Suppressed phase variations in a high amplitude rapidly oscillating Ap star pulsating in a distorted quadrupole mode*’ [[ADS link](#)]

2016: 1 first author and 1 co-author publications

- **D. M. Bowman**, D. W. Kurtz, M. Breger, S. J. Murphy, D. L. Holdsworth, (2016), MNRAS 460, Issue 2, 1970–1989, ‘*Amplitude modulation in δ Sct stars: statistics from an ensemble study of Kepler targets*’ [[ADS link](#)]
- D. W. Kurtz, **D. M. Bowman**, S. J. Ebo, P. Moskalik, R. Handberg, M. N. Lund, (2016), MNRAS 455, Issue 2, 1237–1245, ‘*EPIC 201585823, a rare triple-mode RR Lyrae star discovered in K2 mission data*’ [[ADS link](#)]

2015: 1 first author and 2 co-author publications

- D. W. Kurtz, H. Shibahashi, S. J. Murphy, T. R. Bedding, **D. M. Bowman**, (2015), MNRAS 450, Issue 3, 3015–3029, ‘*A unifying explanation of complex frequency spectra of γ Dor, SPB and Be stars: combination frequencies and highly non-sinusoidal light curves*’ [[ADS link](#)]
- E. Niemczura, S. J. Murphy, B. Smalley, K. Uytterhoeven, A. Pigulski, H. Lehmann, **D. M. Bowman**, G. Catanzaro, E. van Aarle, S. Bloemen, M. Briquet, P. De Cat, D. Drobek, L. Eyer, J. F. S. Gameiro, N. Gorlova, K. Kamiński, P. Lampens, P. Marcos-Arenal, P. I. Pápics, B. Vandebussche, H. Van Winckel, M. Stęślicki, M. Fagas, (2015), MNRAS 450, Issue 3, 2764–2783, ‘*Spectroscopic survey of Kepler stars. I. HERMES/Mercator observations of A- and F-type stars*’ [[ADS link](#)]
- **D. M. Bowman**, D. L. Holdsworth, D. W. Kurtz, (2015), MNRAS 449, Issue 1, 1004–1010, ‘*Combining WASP and Kepler data: the case of the δ Sct star KIC 7106205*’ [[ADS link](#)]

2014: 1 first author publication

- **D. M. Bowman** and D. W. Kurtz, (2014), MNRAS 444, Issue 2, 1909–1918, ‘*Pulsational frequency and amplitude modulation in the δ Sct star KIC 7106205*’ [[ADS link](#)]

XV. Monographs and Book Chapters

- **D. M. Bowman**, (2017), Springer Theses, Springer International Publishing AG (Springer Nature), ‘*Amplitude Modulation of Pulsation Modes in Delta Scuti Stars*’, DOI: [10.1007/978-3-319-66649-5](https://doi.org/10.1007/978-3-319-66649-5), ISBN: 978-3-319-66648-8

XVI. Thesis

- **D. M. Bowman**, (2016), PhD Thesis, Jeremiah Horrocks Institute, University of Central Lancashire, UK, ‘*Amplitude modulation and energy conservation of pulsation modes in delta Scuti stars*’, URL: <http://clock.uclan.ac.uk/18788/>

XVII. Conference Proceedings

- V. Petit, **D. M. Bowman**, D. Cohen, A. David-Uraz, M. Drozd, M. Dill, R. Fine, J. Janik, E. Jensen, Z. Mikulasek, J. Provencal, M. Shultz, R. Townsend, , (2021), ‘*The magnetic braking of the B-type star sigma Ori E*’, MOBSTER-1 virtual conference: Stellar variability as a probe of magnetic fields in massive stars, Proceedings of the MOBSTER-1 virtual conference held 12-17 July 2020, id.50 [[ADS link](#)]

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