

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.

From my undergraduate studies at the University of Birmingham, I became inspired to pursue a research career in asteroseismology and later completed my PhD at UCLan in the UK under the supervision of Prof. Donald Kurtz. In October 2017, my PhD thesis was published as a Springer monograph. In May 2019, I published a first-author paper in Nature Astronomy on my postdoctoral research at KU Leuven, 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 (2020) 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 in Belgium.

II. Education

Postgraduate degree

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 6 months ahead of schedule.

Undergraduate degree

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 present date

Institute of Astronomy, KU Leuven, Celestijnenlaan 200D, 3001 Leuven, Belgium. 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, 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

KU Leuven Research Council Award (POR)

May 2020

This prestigious and highly-competitive prize for early-career postdoctoral researchers within KU Leuven was awarded for my research in massive star asteroseismology. It required recommendations from three referees, a competitive selection process and interview overseen by Executive Research Council of KU Leuven across all the Science, Technology and Engineering faculties, and included a cash prize.

Springer Thesis Award

Oct 2017

My PhD thesis was published as part of the Springer thesis series in 2017 for Outstanding PhD Research. This prestigious scientific prize required recommendations from my PhD supervisor and one of my thesis examiners, and a selection process overseen by the executive editor of astronomy at Springer. Furthermore, this opportunity allowed me to expand my thesis into a detailed monograph and included a cash prize.

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

19 – 23 July 2021

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

MOBSTER1, Virtual

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

29 June – 3 July 2020

Chair of SOC of the special session titled “New insights of angular momentum transport in stellar interiors” held on Wednesday 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 £40 000, and successful grant applications included £3000 from the RAS and £7000 from UCLan for this meeting.

VI. Personal Training

Voice of the future, Westminster, London, UK

15 March 2017

I was awarded an RAS travel grant to this meeting on bridging young scientists and 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

RAS ECN committee member

2020 to present date

Secretary for the **Early Careers Network (ECN)** of the UK Royal Astronomical Society (RAS).

SHOC@SAAO pipeline developer

2020 to present 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.

BEST member

2019 to present date

Non-voting member of the **BRITE Executive Science Team** (BEST).

CUBEspec scientific advisor

2019 to present date

Advisor on the development and implementation of the asteroseismic science case for the CUBEspec cube-sat mission being built by KU Leuven in collaboration with Space Inventor and ESA.

PLATO external reviewer

November 2020

External reviewer for the on-ground data processing algorithms for the complementary science (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*

- Two weeks 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; 106.21S8.003; 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 TESS Guest Investigator proposal obtaining high-precision and short-cadence time series photometry of massive stars in cycle 3 (*G03059; 1058 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 1–3.

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

- Three weeks of observing experience as visiting astronomer in May and June 2017 using the SHOC imager mounted on the 1-m telescope at SAAO.
- PI of service time proposal to gain high-cadence photometry of candidate roAp stars in May 2018.

Mercator Observatory, La Palma, Spain

- Approximately 30 nights of observing experience using the HERMES and MAIA instruments on the 1.2-m Mercator telescope between 2017 and 2020.
- PI of MAIA proposal awarded 80 hr in semester 2020a to gain short-cadence time-series photometry of Ap 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 gain spectroscopy of Ap stars being observed by TESS.
- PI of a HERMES proposal awarded 60 hr in semester 2018a to gain 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

- Approximately 20 nights of observing experience with 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
- Progress committee member of Jordan Van Beeck Sept 2019 to date
Application of non-linear asteroseismology to Kepler and TESS photometry
- Progress committee member of Joris Hermans Sept 2019 to date
Solar flux ropes and tornadoes
- Co-supervisor of Siemen Burssens Sept 2018 to date
Variability of blue supergiants with the K2 and TESS space missions
- Progress committee member of Joey S. G. Mombarg Feb 2018 to date
Forward seismic modelling of intermediate mass stars
- Host supervisor of Mariel Lares-Martiz Sept 2019 to Dec 2019
Non-linear terms in intermediate-mass pulsating stars' power spectra

Master theses, KU Leuven, Belgium

- Supervisor of Nagaraj Badarinarayan Vernekar Sept 2020 to date
On the photometric and spectroscopic variability of Be stars
- 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 to June 2019
Testing stellar evolution with selected high-amplitude delta Scuti stars
- Supervisor of Sven Nys Sept 2018 to June 2019
Asteroseismic modelling of gravity modes in selected intermediate-mass stars
- Co-supervisor of Jordan Van Beeck Sept 2018 to June 2019
The influence of an interior magnetic field on gravity-mode oscillations of intermediate-mass stars
- Examination committee member (reader) of Mathias Michielsen June 2018
Comparing oscillation frequencies of stars with a convective core: Impact of varying input physics

Module Tutor, KU Leuven, Belgium Sept 2019 to date
Responsible for delivering the MSc thesis defence preparation course.

Module Tutor, KU Leuven, Belgium Sept 2018 to date
Examiner for the Bachelor science communication course.

Bachelor and master student projects, KU Leuven, Belgium Sept 2017 to date
Supervision of multiple bachelor and master student projects in asteroseismology.

Module tutor, UCLan, UK Sept 2016 – Jan 2017
Responsible for lecturing first- and second-year Bachelor courses in statistics, astronomy, mathematics, and supervision of astronomy laboratories at Alston observatory.

XI. Scientific Conferences and Workshops

MOBSTER-1, Virtual 13 – 17 July 2020
Co-Chair of the SOC for the first conference of the MOBSTER collaboration.

EAS 2020, Virtual 29 June – 3 July 2020
Chair of the SOC for the special session 5 (SS5) entitled: “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, Leuven, Belgium 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>	8 – 13 July 2018
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.	
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>	11 – 15 Sept 2016
Co-Chair of the LOC celebrating the scientific contributions of Prof. Donald Kurtz.	
TASC2/KASC9 workshop , <i>Terceira-Açores, Portugal</i>	27 June – 1 July 2016
My application for the defrayment of my registration fee was successful.	
National Astronomy Meeting (NAM) , <i>Nottingham University, UK</i>	11 – 15 July 2016
STFC spectroscopy school , <i>Queen's University Belfast, UK</i>	31 Aug – 4 Sept 2015
My accommodation and subsistence costs were funded by STFC.	
KASC8/TASC1 workshop , <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 , <i>RAS, London, UK</i>	8 May 2015
Invited speaker on the topic of pulsations in delta Scuti stars observed by Kepler.	
K2 data workshop , <i>Aarhus University, Denmark</i>	10 – 11 Nov 2014
Attended participated remotely via video-link.	
Ecole Evry Schatzman 2014 , <i>Roscoff, France</i>	28 Sept – 3 Oct 2014
My accommodation and subsistence costs were funded by CNRS.	
CoRoT3/KASC7 meeting , <i>Toulouse, France</i>	6 – 11 July 2014
My application for the defrayment of my registration fee was successful.	
Spectroscopy workshop , <i>Aarhus University, Denmark</i>	19 – 23 May 2014
My application for an RAS travel grant for half the total costs was successful.	

XII. External Talks, Seminars and Colloquia

IAU symposium 361 (Contributed), <i>Ballyconnell, Ireland</i>	originally May 2020
<i>Conference was postponed because of the COVID-19 pandemic.</i>	

Classical pulsators (Invited), <i>University of Surrey, UK</i> <i>Conference was postponed because of the COVID-19 pandemic.</i>	originally Mar 2020
Stars and their Variability (Invited), <i>Vienna, Austria</i>	19 Aug 2019
TESS Sci Con I (Contributed), <i>MIT, Cambridge, USA</i>	30 July 2019
TASC5/KASC12 (Contributed), <i>MIT, Cambridge, USA</i>	23 July 2019
Stellar Hydro Days V (Contributed), <i>Exeter, UK</i>	26 June 2019
Kepler/K2 Sci Con V (Contributed), <i>Glendale, California, USA</i>	7 March 2019
MASSIVE star meeting (Contributed), <i>Leuven, Belgium</i>	4 Oct 2018
PHOST conference (Contributed), <i>Banyuls-sur-mer, France</i>	6 Sept 2018
TASC4/KASC11 workshop (Invited), <i>SAC, Aarhus University, Denmark</i>	13 July 2018
Department seminar, <i>Newcastle University, UK</i>	6 June 2018
Department seminar, <i>ULB, Brussels</i>	19 April 2018
Department seminar, <i>Royal Observatory of Belgium</i>	16 Nov 2017
STARS2016 conference (Contributed), <i>Windermere, UK</i>	14 Sept 2016
Department seminar, <i>SAC, Aarhus University, Denmark</i>	2 May 2016
KASC8/TASC1 workshop (Contributed), <i>SAC, Aarhus University, Denmark</i>	15 June 2015
RAS specialist discussion meeting (Invited), <i>RAS, London, UK</i>	8 May 2015
Department seminar, <i>Keele University, UK</i>	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 my 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.
- 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.
- 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 2 November 2020, my citation metrics are:

Google scholar: [894 citations and h-index of 20](#) **NASA ADS:** [858 citations and h-index of 19](#)

Submitted papers currently under review:

- T. Steindl, K. Zwintz, **D. M. Bowman**, (*submitted to A&A*), ‘*Tidally perturbed pulsations in the pre-main sequence δ Scuti binary RS Cha*’
- J. Southworth, **D. M. Bowman**, K. Pavlovski, (*submitted to MNRAS Letters*), ‘*A β Cephei pulsator and a changing orbital inclination in the high-mass eclipsing binary system VV Orionis*’
- 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, (*submitted to MNRAS*), ‘*MOBSTER – IV. Detection of a new magnetic B-type star from follow-up spectropolarimetric observations of photometrically selected candidates*’
- C. Johnston, N. Aimar, M. Abdul-Masih, **D. M. Bowman**, T. White, C. Hawcroft, H. Sana, S. Sekeran, K. Dsilva, A. Tkachenko, C. Aerts, (*submitted to MNRAS*), ‘*Characterization of the variability in the O+B eclipsing binary HD 165246*’

Accepted papers currently in press:

- 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, (*accepted, in press, A&A*), ‘*Tango of celestial dancers: A sample of detached eclipsing binary systems containing g-mode pulsating components. A case study of KIC9850387*’

Published articles:

- **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*’
- 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*’
- 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*’
- **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*’

- 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*’
- 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*’
- 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*’
- 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*’
- 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*’
- V. Prat, S. Mathis, C. Neiner, J. Van Beeck, **D. M. Bowman**, C. Aerts, (2020), A&A 636, A100, ‘*Period spacings of gravity modes in rapidly rotating magnetic stars. II. The case of an oblique dipolar fossil magnetic field*’
- 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. Vermeulen, H. Sana, (2020), Nature, Volume 580, Issue 7805, E11–E15, ‘*On the signature of a 70-solar-mass black hole in LB-1*’

2019

- 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 δ Sct and γ Dor stars with the TESS mission*’
- V. Khalack, C. Lovekin, **D. M. Bowman**, O. Kobzar, A. David-Uraz, E. Paunzen, J. Sikora, P. Lenz, O. Kochukhov, D. L. Holdsworth, G. A. Wade, (2019), MNRAS 490, Issue 2, 2102–2111, ‘*Rotational and pulsational variability in the TESS light curve of HD 27463*’
- **D. M. Bowman**, C. Johnston, A. Tkachenko, D. Mkrtichian, 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*’
- 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*’
- **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*’

- S. Burssens, **D. M. Bowman**, C. Aerts, M. G. Pedersen, E. Moravveji, B. Buysschaert, (2019), MNRAS 489, Issue 1, 1304–1320, ‘*New β Cep pulsators discovered with K2 space photometry*’
- 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*’
- 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*’
- 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*’
- M. S. Cunha, V. Antoci, D. L. Holdsworth, D. W. Kurtz, L. A. Balona, Zs. Bognár, **D. M. Bowman**, Z. Guo, P. P. A. Kolaczek-Szymański, M. Lares-Martiz, E. Paunzen, M. Skarka, B. Smalley, Á. Sódor, O. Kochukhov, T. R. Bedding, D. L. Buzasi, L. Fox-Machado, A. Hasanzadeh, E. Niemczura, P. Quiral-Manosalva, I. Stateva, P. De Cat, A. García Hernández, H. Ghasemi, G. Handler, J. M. Matthews, M. J. P. F. G. Monteiro, J. M. Nemec, J. Pascual-Granado, H. Safari, J. C. Suárez, R. Szabó, A. Tkachenko, W. W. Weiss, (2019), MNRAS 487, Issue 3, 3523–3549, ‘*Rotation and pulsation in Ap stars: first light results from TESS sectors 1 and 2*’
- A. David-Uraz, C. Neiner, J. Sikora, **D. M. Bowman**, V. Petit, S. Chowdhury, G. Handler, M. Perge-orelis, 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*’
- **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*’
- 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*’
- 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*’
- 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. Rózański, 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*’
- M. G. Pedersen, S. Chowdhury, C. Johnston, **D. M. Bowman**, C. Aerts, G. Handler, P. De Cat, C. Neiner, A. David-Uraz, D. Buzasi, A. Tkachenko, S. Simón-Díaz, E. Moravveji, J. Sikora, G. Mirouh, C. C. Lovekin, M. Cantiello, J. Daszyńska-Daszkiewicz, A. Pigulski, (2019), ApJL 872, Issue 1, L9, ‘*Diverse variability of O and B stars revealed from 2-minute light curves in sectors 1 and 2 of the TESS mission: selection of an asteroseismic sample*’
- **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

- 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*’

2018

- 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*’
- 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*’
- 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*’
- D. L. Holdsworth, H. Saio, R. R. Sefako, **D. M. Bowman**, (2018), MNRAS 480, Issue 2, 2405–2410, ‘*LCO observations of a super-critical distorted pulsation in the roAp star J0855 (TYC 2488-1241-1)*’
- **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*’
- 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*’
- 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*’
- **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*’
- 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*’
- 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*’

2016

- **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*’
- 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*’

- 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*’
- 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*’
- **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*’

- **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*’

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://clou.uclan.ac.uk/18788/>

XVII. Conference Proceedings

- J. Barron, G. A. Wade, **D. M. Bowman**, A. David-Uraz, S. Simón-Díaz and the MOBSTER Collaboration, (*in press*), ‘*MOBSTER: Identifying Candidate Magnetic O Stars through Rotational Modulation of TESS Photometry*’, Stellar Magnetism: A Celebration of the Contributions of J. D. Landstreet, July 2019, London, UK. Proceedings of the Polish Astronomical Society.
- A. David-Uraz, C. Neiner, J. Sikora, **D. M. Bowman**, P. Cerrahoglu, D. H. Cohen, C. Erba, O. Kobzar, V. Petit, A. ud-Doula, G. A. Wade and the MOBSTER Collaboration, (*in press*), ‘*MOBSTER: Establishing a Picture of Magnetic Massive Stars as a Population*’, Stellar Magnetism: A Celebration of the Contributions of J. D. Landstreet, July 2019, London, UK. Proceedings of the Polish Astronomical Society.
- O. Kobzar, V. Khalack, D. Bohlender, A. David-Uraz, P. Kashko, **D. M. Bowman**, C. Lovekin, D. Tvardovskyi, M. Perron-Cormier, E. Paunzen, J. Sikora, P. Lampens and O. Richard, (*in press*), ‘*Study of slowly rotating CP stars observed with TESS*’, Stellar Magnetism: A Celebration of the Contributions of J. D. Landstreet, July 2019, London, UK. Proceedings of the Polish Astronomical Society.

- V. Prat, S. Mathis, B. Buysschaert, J. Van Beeck, **D. M. Bowman**, C. Aerts and C. Neiner, (2020), ‘*Effect of the magnetic field on period spacings of gravity modes in rapidly rotating stars*’, Proceedings of the conference ‘Stars and their Variability Observed from Space’, held in Vienna on August 19-23, 2019. Eds.: C. Neiner, W. W. Weiss, D. Baade, R. E. Griffin, C. C. Lovekin, A. F. J. Moffat. University of Vienna, 2020, pp.105-106
- A. David-Uraz, C. Neiner, J. Sikora, **D. M. Bowman**, P. Cerrahoglu, D. H. Cohen, C. Erba, O. Kobzar, V. Petit, A. ud-Doula, G. A. Wade and the MOBSTER Collaboration, (2020), ‘*Magnetic OB[A] stars with TESS: probing their evolutionary and rotational properties – the MOBSTER collaboration*’, Proceedings of the conference ‘Stars and their Variability Observed from Space’, held in Vienna on August 19-23, 2019. Eds.: C. Neiner, W. W. Weiss, D. Baade, R. E. Griffin, C. C. Lovekin, A. F. J. Moffat. University of Vienna, 2020, pp.471-474
- **D. M. Bowman**, (2020), ‘*What physics is missing in theoretical models of high-mass stars: new insights from asteroseismology*’, Proceedings of the conference ‘Stars and their Variability Observed from Space’, held in Vienna on August 19-23, 2019. Eds.: C. Neiner, W. W. Weiss, D. Baade, R. E. Griffin, C. C. Lovekin, A. F. J. Moffat. University of Vienna, 2020, pp.53-59
- **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, (*in press*), ‘*Photometric detection of internal gravity waves in early-type stars observed by CoRoT*’, EPJ Web of Conferences, PHOST: Physics of Oscillating Stars – a conference in honour of Prof. H. Shibahashi, 2-7 Sept. 2018, Banyuls-sur-mer, France. Edited by J. Ballot, S. Vauclair, G. Vauclair.
- **D. M. Bowman**, D. W. Kurtz, M. Breger, S. J. Murphy, D. L. Holdsworth, (2017), ‘*Amplitude modulation in δ Sct stars: statistics from an ensemble of Kepler targets*’, EPJ Web of Conferences, Volume 160, id.03008, Seismology of the Sun and the Distant Stars – Using Today’s Successes to Prepare the Future – TASC2 & KASC9 Workshop – SPACEINN & HELAS8 Conference, Azores Islands, Portugal. Edited by M. J. P. F. G. Monteiro, M. S. Cunha, J. M. T. S. Ferreira.
- **D. M. Bowman** and D. W. Kurtz, (2015), ‘*Amplitude Modulation in the δ Sct star KIC 7106205*’, EPJ Web of Conferences, Volume 101, id.06013, The Space Photometry Revolution – CoRoT Symposium 3, Kepler KASC-7 Joint Meeting, Toulouse, France. Edited by R. A. García, J. Ballot.

XVIII. White Papers

- A. Tkachenko, C. Aerts, **D. M. Bowman**, T. Van Reeth, J. De Ridder, C. Johnston, M. G. Pedersen, S. Burssens, M. Michielsen, J. Mombarg, S. Sekaran, R. Bjorklund, T. Rogers, P. V. F. Edelmann, R. P. Ratnasingham, K. Zwintz, J. Kollmeier, J. Johnson, H-W. Rix, J. Tayar, (2019), Astro2020: Decadal Survey on Astronomy and Astrophysics, science white papers, no. 198; Bulletin of the American Astronomical Society, Vol. 51, Issue 3, id. 198, ‘*Astro2020 Science White Paper: gravity-wave asteroseismology of intermediate- and high-mass stars*’