Section A: Overview of the Research Project

1) **21cm cosmology with MeerKAT**
2) Science
3) Doctoral
4) Abstract:

A key goal of cosmology is to understand the accelerated expansion of the Universe, believed to be driven by a force called Dark Energy. Mapping the distribution of galaxies throughout the Universe's lifetime can measure the expansion history and help us understand the nature of Dark Energy. Historically, cosmologists have successfully used the optical emission of stars located in galaxies to map the cosmic web over time. In the past decade, a new method called intensity mapping has emerged which uses the radio emission of gas (specifically the highly abundant Neutral Hydrogen gas) to trace the galaxy distribution. MeerKAT is a large 64-dish radio telescope arrays, capable of higher sensitivities and spatial resolution than any existing radio instrument. Using MeerKAT as a collective of single-dish telescope, we can measure HI intensity maps for a majority of the cosmic lifetime and start unravelling our cosmological history. The student will work within the MeerKLASS collaboration who previously successfully detected the HI signal in combination with optical galaxies in the L-Band and is now moving towards higher redshift cosmological measurements using the UHF band of MeerKAT. The student will work on developing techniques for the analysis of the intensity maps, such as foreground removal methods or HI astrophysics inference analysis for the cross-correlation with galaxies. First, the techniques will be tested with simulation, co-developed with the simulation working group within MeerKLASS, followed by an application to the UHF data, aiming to constrain HI-galaxy property relation via bias and correlation coefficient measurements.

5) Primary supervisor's details:
   a) Prof Mario Santos
   b) mgrsantos@uwc.ac.za
   c) University of Western Cape
6) Co-supervisor/Research supervisor's details (if relevant)
   a) Dr Laura Wolz
   b) University of Manchester, UK

Section B: Details of Research Project

1. **Scientific merit**:

   Towards precision cosmology: Develop an understanding of large-scale structure cosmology in the context of optical galaxy clustering and HI intensity mapping; This project will contribute to advance radio cosmology into a precision era to provide complementary cosmological constraints, potentially mitigating cosmic tensions.

   Advancing techniques for Radio Astronomy: Familiarity with calibration pipelines for single dish radio observations (including calibration steps, RFI flagging, instrumental effects); This project will test and apply methods for radio astronomy which will be

particularly relevant for science readiness for the SKAO, both the full SKA1 as well as AA2.

21cm cosmology: Understand and apply existing foreground removal methods and power spectrum estimators to simulations and data; Develop new strategies to replace the individual standard methods and test their performance on simulations. A major objective of this project to use inter-disciplinary methods from other 21cm experiments at lower frequencies, such as HERA, or LOFAR, but also the Australian pathfinders MWA and ASKAP.

HI science beyond the local Universe: Develop robust methods to measure the cross-correlation between intensity maps and galaxy surveys; Measure relations of HI with other galaxy properties via the cross-correlation of intensity maps and galaxy surveys. This science case cannot be done with high statistical significancy via direct detections as objects are too faint for detection in large samples.

2. **Feasibility**:

The student will be supervised by the Prof Santos, PI of MeerKLASS and Dr Wolz, Advisory Board chair of MeerKLASS, via shared, weekly zoom meetings, and individual in-person meetings as required. The student will have access to all software and pipelines developed within the MeerKLASS collaboration, this includes the calibration pipeline, and the foreground removal and power spectrum pipeline. The student will first learn to understand, and then run parts of the existing codes under guidance of supervisors and collaborators at UWC and University of Manchester. The student will then start to alter the pipeline in small steps, tested on simulations and verified data. The final goal will be to apply new techniques to our on-going large-scale UHF survey data. The MeerKLASS collaboration has successfully competed for observing time in several open time calls. Currently we have about 80 hours of L-band data and 120 hours of UHF with another 270 hours being currently observed. These observations overlap with several spectroscopic surveys such as WiggleZ, eBOSS and DESI. All MeerKLASS codes are hosted in a github and MeerKLASS data is on the Ilifu cloud were also all codes can be run.

This project has a potential for 2 first-author publications, but also co-authorship on other MeerKLASS papers through pipeline contributions. All project work will be in collaboration with other MeerKLASS members, facilitated through joining weekly telecons of the working groups as well as attendance of Busy Weeks. The student will have the opportunity to visit the University of Manchester.

1-18 months: Learn MeerKLASS processing pipelines and run existing example codes and notebooks. Identify suitable method to substitute standard techniques and investigate performance on simulations and data. (Publication 1)

18-30 months: Identify patch of data with overlapping synergy dataset, such as optical/NIR galaxy survey. Learn existing methods, such as power spectrum, and bispectrum and identify suitable methods for comparison. Develop a pipeline how we can measure HI astrophysics, for example via a bias and correlation index analysis in the cross-power spectrum and verify with simulations.

30-36 months: Apply analysis to existing MeerKLASS data and produce data measurements on cross-correlation. (Publication 2).

3. Link the proposed project to one or more of the **SARAO research priority** areas for 2024 (refer to Section 5 of the Application Guide), and explain in some detail how the proposed research will contribute to the priority area(s).

This project addresses Science Priority MeerKAT. The project will be under the MeerKLASS survey, a single-dish survey to map the large-scale structure via 21cm emission. The latest proposal in 2023 has been given Science Priority A. It was a multi-year proposal which requested ~2500 hours to complete a 10,000 sg degree survey of the Southern Sky. This project will contribute to the development of important methods for future SKAO surveys.

4. If relevant, describe any particular qualifications, academic abilities, skills and/or experience that a student should have in order to successfully deliver on the objectives of the research proposed.

The student will be required to code in python and use HPC facilities. Previous knowledge is not essential but a high enthusiasm for coding and data analysis is required. Academic background in Physics essential, Astrophysics/Astronomy desired.

Section C – CV Mario Santos

Personal data

Name: **Mário Gonçalo Rodrigues dos Santos**
Nationality: **Portuguese**
DOB: **16/01/1975**
Phone: **+27 21 9592519**
Fax: **+27 21 959-3474**
Email: **mgrsantos@uwc.ac.za**

Address:

Department of Physics and Astronomy,
University of the Western Cape,
Robert Sobukwe Road,
Bellville 7530, Cape Town, South Africa

Education

Date	*Degree*	*Institution*
2003	DPhil in Physics (PhD)	Department of Physics, University of Oxford
1999	Master of Advanced Study	University of Cambridge
1998	Diploma in Physics	Faculdade de Ciências, University of Lisbon

Scientific Employment

Dates	*Position*	*Institution*
2018 -	SARChI chair	UWC/National Research Foundation, SA
2016 -	Full Professor	University of the Western Cape, Cape Town, SA
2013 -	SARAO Research Scientist	SKA South Africa, Cape Town
2013 - 2015	Associate Professor	University of the Western Cape, Cape Town, SA
2008 - 2013	Senior Research Fellow	CENTRA, Instituto Superior Técnico
2005 - 2008	Professor Auxiliar Convidado	Dept. Physics, Instituto Superior Técnico
2005 - 2008	FCT Post-doctoral Researcher	FCT and CENTRA
2003 - 2005	Post-doctoral Researcher	Dept. Physics, University of California at Davis

Scientific advisor/management activities

2017 -	Director, Centre for Radio Cosmology (CRC) at UWC
2018 -	(PI) MeerKLASS: MeerKAT Large Area Synoptic Survey - A Cosmology Survey using MeerKAT
2020 -	HIRAX: Hydrogen Intensity and Real-time Analysis eXperiment (Management Team)
2017 -	MIGHTEE - MeerKAT Large Survey Project: working group chair
2020 - 2022	Chair of the NRF rating specialist committee for Astronomy and Space Science
2020-	Board member of the HERA project
2015 - 2017	Chair of the international SKA Cosmology Science Working Group
2017 - 2019	Member of the South African Radio Astronomy Observatory Users Committee
2017 -	Pathfinder Radio Continuum Survey Group (SPARCS): working group chair
2015 - 2018	Coordinator of the UWC-SARAO sponsored undergraduate program
2014 - 2017	Member of the SKA South Africa Science Committee
2015	Editor: The SKA Science Book (2 volumes), "Advancing Astrophysics with the Square Kilometre Array, "Eds. T Bourke et al (Dolman Scott 2015)
2014 - 2016	UWC Postgraduate committee, Physics dept. representative
2010 - 2012	Member of the European SKA Science Working Group (ESSWG)
2007 - 2009	Board member of the SKADS consortium

Member of several grant panels.

Referee of several research proposals: European Research Council (ERC) grants, Royal Society (UK), FCT

(Portugal), NRF (SA), NWO (Veni – Netherlands)

Referee of several journals: Physical Review Letters, Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Physical Review D, Journal of Cosmology and Astroparticle Physics

Examiner of 18 PhD/MSc thesis.

Research Grants (as PI)

2018 -	NRF-SA SARChI chair
2016 -	SKA-SA block grant to fund the Center for Radio Cosmology (CRC)
2015-2019	Development of Multi-Wavelength Astronomy in South Africa on the Pathway to the SKA, LSST and CTA (Newton Fund/UK PhD Partnership Scheme)
2016-2019	Extragalactic Astronomy and Cosmology Using GMRT, MeerKAT and the SKA (bilateral India/SA grant)
2015 - 2017	NRF grant - Competitive Programme for Rated Researchers: "From MeerKAT to the SKA: Cosmology with HI intensity mapping techniques"
2015 - 2018	SKA block grant application, undergraduate programme
2010 - 2013	FCT grant PTDC/FIS/100170/2008, Path2SKA@PT: "*On the Pathway to SKA: Science with the next generation of radio-telescopes*"; Rating: *Excellent*
2007 - 2010	SKASIM: "*Science Simulations for the SKA: Reionization and Weak Lensing*"; PTDC/FIS/66825/2006; Rating: *Excellent*

I am also responsible for several individual postdoctoral/PhD and grants.

Supervising experience

PhD students: 5 completed; 4 ongoing.

Master students: 12 completed, 3 ongoing.

Post-doctoral researchers: 14 completed; 5 ongoing.

Presentations: Over 20 presentations as invited speaker at international conferences/workshops, including The Dark Side of the Universe international workshop, The 32nd Texas Symposium on Relativistic Astrophysics (LSS), the Kavli Prize Symposium in Astrophysics, the IAU Symposium on Statistical Challenges in 21st Century Cosmology and the UK National Astronomy Meeting, plus over 50 contributed talks and seminars since 2014. Also gave lectures at several international schools as well as outreach/public talks.

Publications

96 papers in peer-reviewed international journals as well as several conference proceedings and book chapters.
Full updated list:

https://scholar.google.com/citations?hl=en&user=dIwTbeMAAAAJ&view_op=list_works&sortby=pubdate

Google scholar h-index: 48
NRF A-rated researcher

Section D – CV Laura Wolz

https://orcid.org/0000-0003-3334-3037

http://www.jb.man.ac.uk/~lwolz/

EDUCATION

2011 German Diploma in Physics (MSc-equivalent)
Advisors: Prof. Jochen Weller & Dr. Martin Kilbinger
Department of Physics, **Ludwig-Maximilian University**, Germany

2008 'Vordiplom' in Physics (BSc-equivalent)
Department of Physics, **Ludwig-Maximilian University**, Germany

2014 **PhD in Astrophysics**
Department of Physics and Astronomy, **University College London**, UK
Advisors: Dr Filipe Abdala & Prof Chris Blake (Swinburne University, AUS)

EMPLOYMENT

2022 – UKRI Future Fellow Leader

2019 – Presidential Fellow
Department of Physics and Astronomy, University of Manchester, UK

2017 – 2019 Research Fellow Level B
Discovery Early Career Research Award (DECRA) Fellow
School of Physics, **University of Melbourne**, Australia

2014 – 2017 CAASTRO Postdoctoral Fellow Level A
School of Physics, **University of Melbourne**, Australia

CAREER BREAKS

Nov 21 – May 22 Maternity Leave (6 Months)
Nov 18 – Jul 19 Maternity Leave (8 Months)

GRANTS AWARDED

2022 – **STFC Consolidated Grant** Theme 1.4; 33% share (1 PDRA ~130k), UK Research and Innovation

2022 – **Future Leader Fellow** (FLF, 1.37m GBP), UK Research and Innovation

2017 – 2019 **Discovery Early Career Research Award** (DECRA, 360k AUD), Australian Research Council, Australia

2017 **Establishment Grant Award** (50k AUD), University of Melbourne, Australia

2018 **Seal of Excellence** - **Marie Skłodowska-Curie** Individual Fellowship, call H2020-MSCAIF-2017

2012/2013 CAASTRO visitor scheme award (6k AUD each)

INSTITUTIONAL RESPONSIBILITIES

2023-present EDI lead and member of DLT at the Department of Physics and Astronomy, University of Manchester, UK

2023-present MSc in Research in Physics Programme Director, University of Manchester, UK

2020 -present. MSc in Research in Astrophysics and Astronomy Programme Director, University of Manchester, UK

COLLABORATIONS

2023-present UK member of **Science and Engineering Advisory Committee** to the SKA Observatory

2023-present Chair of Advisory Board MeerKLASS collaboration (~40 members)

2017- present Co-Chair of SKA HI intensity mapping Focus Group (~40 members)

2017-2021 Co-Chair of the SKA Cosmology Science Working Group (~130 members)

2018– present SKA Regional Centre Steering Committee Cosmology Representative

Member of Euclid collaboration, SkyPy collaboration, DINGO survey as Australian SKA Pathfinder, Green Bank Telescope Intensity Mapping collaboration, SKA Epoch of Reionisation Science Working Group

STUDENTS

2023 - present 1 MScR student, University of Manchester, UK

2023 - present 2 visiting PhD student, University of Manchester, UK (visiting scholarships with NAO Beijing and Tsinghua University)

2022 – present 1 PhD student co-supervision

2020 – 2023 1 PhD student, University of Manchester, UK (graduated after 3 years)

2019 – 2020 1 MScR student, University of Manchester, UK (graduated with Distinction)

2020; 2022 4 MPhys 4rth year project supervision, University of Manchester, UK

ORGANISATION OF SCIENTIFIC MEETINGS

Feb 2024	Royal Astronomical Society Specialist Discussion Meeting (~30p) co-organiser
Jan 2023	SKA Cosmology SWG meeting Manchester University (~50p., hybrid) – Chair of LOC
Mar 2021	SKA Science Conference (~900p., virtual) – Member of SOC
Jan 2021	SKA Cosmology SWG meeting (~40p., virtual) – Entire coordination of event
Jan 2020	SKA Cosmology SWG meeting Paris, France (~35p.) – Entire scientific coordination of event
Apr 2019	SKA Key Science Workshop Manchester, UK (~250p.) – Member of SOC
Feb 2018	Aspen conference Intensity Mapping, Colorado, US (~ 40p.) - Member of SOC
Dec 2017	SKA Cosmology SWG meeting QMUL, London, UK (~40p.) – SOC
2017	CAASTRO retreat: Early Career Researcher Day (~15p.) – Coordination of programme

RESEARCH PRESENTATIONS

- Invited Plenary – total 14
  - **21cm workshop**, SISSA, Trieste Italy, Sep 2023
  - **National Astronomy Meeting** (NAM), Cardiff, UK, Jul 2023

- **Spectral Distortion workshop**, Royal Astronomical Society, London, UK, Jun 2023
- **Present and Future of Line-Intensity Mapping workshop**, Max Planck Institute for Astrophysics, Garching, GER, Apr 2023
- **21cm Cosmology workshop** (hybrid), Madison University, US, Aug 2022
- **HITS meeting** (hybrid), Trieste IT, May 2022
- **COSMO**, Rio, Brasil 2020 (postponed to 2022)
- **UK SKA Science Town Hall**, Liverpool, 2020 (cancelled)
- **COSPAR**, Pasadena, US 2018
- *Science at Low Frequencies IV, Sydney, AU 2017*
- **2nd Annual Intensity Mapping Workshop**, John-Hopkins University, Baltimore, US 2017
- **2nd ACAMAR meeting**, Shanghai, China 2016
- **OzSKA** conference Perth, Australia 2016
- *Tianlai 21cm workshop Beijing, China 2014*

19 invited seminar presentations at University of Edinburgh UK (May 24), University of Sussex UK (April 24), IFCA Santander ESP (April 24), IAA Granada ESP (Jul 22), Imperial College UK (Jun 21), ICG Portsmouth UK (Jul 21), ITP Heidelberg GER (Jun 21); IFPU Trieste IT (May 21), Green Bank Observatory Community webinars US (Mar 21), CSIRO Astronomy and Space Science Sydney AUS (Apr 2018), University of Toronto CAN (Oct 2017), ICG Portsmouth UK (Jul 2017), Curtin University AUS (Apr 2016), Imperial College London UK (Feb 2016), EPFL Lausanne CH (Feb 2016), Monash University AUS (Aug 2015), University Observatory LMU Munich GER (Jul 2015), Swinburne University AUS (Jun 2015), and University of Western Australia AUS (Feb 2015)

REVIEWING ACTIVITIES

Grant Reviewer (UKRI Future Leader Fellow Peer Review College UK, Australian Research Council Discovery Grants AUS, EPFL EXAF-JFD call, Switzerland, South African National Research Foundation)

Journal Reviewer (Nature Astronomy, Astronomy&Astrophysics, Monthly Notices of Royal Astronomical Society, Journal of Cosmology and Astroparticle Physics, Physics Letters B)

OUTREACH ACTIVITIES

- Science Talk at **9 Lessons and Carols for Curious people** by Cosmic Shambles at Manchester, Dec 2023 (300p.)
- Lecture on SKA Observatory at New Scientist weekend event in Cheshire, Nov 2023
- **Science Talk at BlueDot Festival,** Jodrell Bank, UK Jul 2023
- **Institute of Physics Lecture** Yorkshire branch, University of Leeds, UK, May 2023
- **Conference for Undergraduate Women and Non-Binary Physicists,** Jodrell Bank Observatory, UK, March 2023 (~50p.)
- **Institute of Physics Lecture** Manchester branch**,** Manchester Metropolitan University, UK 2022 (~50p., partly high-school students)
- **Meet the Expert**, Discovery Centre Jodrell Bank Observatory UK 2022 (~160p. mixed audience)

- Consultation on art installation 'The Compass' at the British Science festival, Leicester UK 2022
- Science talk at **Pint of Science** Manchester UK 2022 (~40p. mixed audience)
- Discussion panel at **Cheltenham Science Festival** UK 2021 (hybrid event: ~150p)
- Science Talk at **BlueDot Festival**, UK Jul 2020 (canceled due to covid 19)
- **Public Lecture at Girls Night Out,** Discovery Centre Jodrell Bank Observatory, UK Mar 2020 (~100p.)
- Opening Plenary Address **VCE Physics Teacher conference** Melbourne, AU 2019 (~200p)
- Plenary Lecture at **Girls in Physics breakfast** Swinburne University AU 2018 (~100p)
- Public talk **AstroLight Festival** Melbourne, AU Sep 2017 (~50p. mixed audience)
- **Public Lecture** Swinburne University, AU, 2015 (~50p. mixed audience)

PUBLICATIONS

a) Peer reviewed:

Number of Citation included as [Citations] (State 05.01.24 SAO/NASA Astrophysics Data System)

Total number of first/corresponding author publications: 10 [575]; h-index 15

Publications marked with * are led by L. Wolz or PDRA/PhD student I directly supervise or line-manage

Total number of refereed publications: 23 [1414]

1. *Chen Z., Chapman E., **Wolz L.,** Mazumder A. *Detecting the H I power spectrum in the post-reionization Universe with SKA-Low* MNRAS, vol. 524, no 3, pp.3724-3740, Sep 2023. [2]
2. Li, Yichao; Wang, Yougang; Deng, Furen; Yang, Wenxiu; Hu, Wenkai; Liu, Diyang; Zhao, Xinyang; Zuo, Shifan; Shu, Shuanghao; Li, Jixia; Timbie, Peter; Ansari, Réza; Perdereau, Olivier; Stebbins, Albert; **Wolz, Laura**; Wu, Fengquan; Zhang, Xin; Chen, Xuelei *FAST Drift Scan Survey for HI Intensity Mapping: I. Preliminary Data Analysis,* The Astrophysical Journal, Volume 954, Issue 2, id.139, 22 pp. Sep 2023 [5]
3. *Cunnington, Steven; **Wolz, Laura**; Bull, Philip; Carucci, Isabella P.; Grainge, Keith; Irfan, Melis O.; Li, Yichao; Pourtsidou, Alkistis; Santos, Mario G.; Spinelli, Marta; Wang, Jingying *The foreground transfer function for H I intensity mapping signal reconstruction: MeerKLASS and precision cosmology applications* Monthly Notices of the Royal Astronomical Society, Volume 523, Issue 2, pp.2453-2477 Aug 2023 [10]
4. *Chen Z., **Wolz L**., Battye, R. *Towards optimal foreground mitigation strategies for interferometric*
   H I intensity mapping in the low-redshift Universe, MNRAS, vol. 518, no. 2, pp.2971-2990, Jan 2023. [3]
5. *Cunnington S., Li Y., Santos M.G., Wang J., Carucci I.P., Irfan M.O., Pourtsidou A., Spinelli, M., **Wolz, L**. et al. *H I intensity mapping with MeerKAT: Power spectrum detection in crosscorrelation with WiggleZ galaxies,* MNRAS, Feb 2023 [45]
6. ***Wolz, L**., Pourtsidou A., Masui K.W., Chang T.C., Bautista J.~E., Muller E.-M., Avila S., et al. *HI constraints from the cross-correlation of eBOSS galaxies and Green Bank Telescope intensity maps*, MNRAS, vol. 510, no. 3, pp. 3495–3511, Mar 2022. [71]

7. A Spinelli, Marta; Carucci, I. P.; Cunnington, S.; Harper, S. E.; Irfan, M. O.; Fonseca, J.; Pourtsidou, A.; **Wolz, L**., *SKAO H I intensity mapping: blind foreground subtraction challenge,*
   MNRAS, vol. 509, no. 2, pp. 2048–2074, Jan 2022. [34]
8. Amara A., de la Bella L., Birrer S., Bridle S., Cordero J., Favole G., Harrison I., et al (incl Wolz, L.). *SkyPy: A package for modelling the Universe*, Journal of Open Source Software, vol. 6, issue 65, id. 3056, Sep 2021 [7]
9. *Chen Z., **Wolz L**., Spinelli M., Murray S.~G., *Extracting H I astrophysics from interferometric intensity mapping,* 2021, MNRAS, 502, 5259-5276, Apr 2021 [11]
10. *The SKA Cosmology Science Working Group, Corresp. authors: **L. Wolz**, R. Battye, *Cosmology with Phase 1 of the Square Kilometre Array Red Book 2018: Technical specifications and performance forecasts*, PASA, Vol 37, id. e007, Mar 2020 [271]
11. A. Weltmann, et al incl. **L Wolz**, *Fundamental physics with the Square Kilometre Array*, PASA, Volume 37, article id. e002, Jan 2020 [252]
12. S. Cunnington, **L. Wolz**, A. Pourtsidou, D. Bacon, *Impact of foregrounds on H I intensity mapping cross-correlations with optical surveys*, MNRAS, Vol 488, Issue 4, p.5452-5472, Oct 2019 [37]
13. ***L. Wolz**, S.G. Murray, C. Blake, J. S. B. Wyithe. *Intensity mapping cross-correlations II: HI halo models including shot noise*, MNRAS, Vol 484, Iss 1, p.1007-1020, Mar 2019 [27]
14. C. J. Anderson, et al incl**. L. Wolz**. *Low-amplitude clustering in low-redshift 21-cm intensity maps cross-correlated with 2dF galaxy densities*, MNRAS, Vol 476, Issue 3, p.3382-3392, May 2018 [122]
15. A. Dabbech, **L.Wolz**, L. Pratley, J.D. McEwen, Y. Wiaux. *The w-effect in interferometric imaging:*
    from a fast sparse measurement operator to superresolution, MNRAS, Vol 471, Issue 4, p43004313 [13]
16. ***L. Wolz**, C. Blake, J. S. B. Wyithe. *Determining the HI content of galaxies via Intensity Mapping cross- correlations*, MNRAS, Vol 470, Iss 3, pp. 3220-3226, Sep 2017 [48]
17. ***L. Wolz**, C. Blake, F. B. Abdalla, C. M. Anderson, T.-C. Chang, Y.-C. Li, K. W. Masui, E. Switzer, U.-L. Pen, T. C. Voytek, J. Yadav. *Erasing the Milky Way: new cleaning technique applied to GBT Intensity Mapping data*. MNRAS, Vol 464, Issue 4, p.4938-4949, Feb 2017 [60]
18. ***L.Wolz,** C. Tonini, C. Blake, J.S.B. Wyithe, *Intensity mapping cross-correlations: connecting the largest scales to galaxy evolution,* MNRAS, Vol 458, Issue 3, p.3399-3410, May 2016 [32]
19. M. Santos, et al incl. **L. Wolz**. *Cosmology from a SKA HI Intensity Mapping survey.* Advancing Astrophysics with the Square Kilometre Array (AASKA14), art. 19, 2015 [143]
20. ***L. Wolz**, F. B. Abdalla, D. Alonso, C. Blake, P. Bull, T. C. Chang, P. Ferreira, C. Y. Kuo, M. Santos, J. R. Shaw. *Foreground Subtraction in Intensity Mapping with the SKA*. Advancing Astrophysics with the Square Kilometre Array (AASKA14), art. 35, 2015. [14]
21. M. T. Soumagnac et al incl **L. Wolz**. *Star/galaxy separation at faint magnitudes: application to a simulated Dark Energy Survey* , MNRAS, Vol 450, Issue 1, p.666-680, Jun 2015.[53]

22. ***L. Wolz**, F. B. Abdalla, C. Blake, J. R. Shaw, E. Chapman, S. Rawlings. *The effect of foreground subtraction on cosmological measurements from Intensity Mapping*. MNRAS, Vol 441, Issue 4, p.3271-3283, Jul 2014. [84]
23. **L. Wolz,** J.D. McEwen, F.B. Abdalla, R.E. Carrillo, Y. Wiaux. *Revisiting the spread spectrum effect in radio interferometric imaging: a sparse variant of the w-projection algorithm* MNRAS, Vol 436, Issue 3, p.1993-2003, Dec 2013 [14]
24. ***L. Wolz**, M. Kilbinger, J. Weller, T. Giannantonio. *On the validity of cosmological Fisher matrix forecasts*. JCAP, Issue 09, article id. 009 (2012), Sep 2012. [63]

Under peer-review:

1. Sourabh P., Santos M., Chen Z., **Wolz L.** *A first detection of neutral hydrogen intensity mapping on Mpc scales at $z\approx 0.32$ and $z\approx 0.44$* submitted to ApJL, arXiv:2301.11943, Feb 2023
2. Cunnington S., Wolz L. *Accurate Fourier-space statistics for line intensity mapping: Cartesian grid sampling without aliased power* under review at MNRAS Dec 2023

Not peer reviewed:

25. **L. Wolz.** *Dark Energy with the Square Kilometre Array*, 42nd COSPAR Scientific Assembly. Held 14-22 July 2018, in Pasadena, California, USA, Abstract id. E1.1-18-18, Jul 2018
26. M. Santos et al incl **L. Wolz,** *MeerKLASS: MeerKAT Large Area Synoptic Survey,* Sep 2017 **eprint arXiv:1709.06099** [75]
27. E.D. Kovetz et al. incl **L. Wolz** *Line-Intensity Mapping: 2017 Status Report* **eprint arXiv:1709.09066** [217]
28. **L. Wolz,** F.B. Abdalla, R.E. Carrillo, Y. Wiaux, J.D. McEwen. *The varying w spread spectrum effect for radio interferometric imaging,* Proceedings of the Biomedical and Astronomical Signal Processing Frontiers (BASP) workshop 2013