

# Curriculum Vitae - Dr. Sthabile Kolwa

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## EMPLOYMENT

- Jan 2021 - present**    **Lecturer**, University of Johannesburg  
Lecturing Engineering Physics 2A and Astrophysics Radiative Processes  
Research on radio galaxy evolution and spectral properties of faint radio sources detected with MeerKAT
- Mar 2020 - Dec 2020**    **Postdoctoral Research Fellow**, Inter-University Institute for Data Intensive Astronomy (IDIA)  
Processing uGMRT data  
Research on the spectral signatures of radio galaxies
- Aug 2016 - Dec 2019**    **Doctoral Student Researcher**, European Southern Observatory (ESO)  
Research on the gas surrounding distant radio galaxies  
Processing astronomical datasets  
Data analysis and visualisation for publication in peer-reviewed journals
- Jan - Nov 2013**        **Astronomy Tutor**, University of Cape Town (UCT)  
Teaching assistant for Introductory Astronomy (AST 1000F), University of Cape Town (UCT)

## EDUCATION

- 2016 - 2019**        **Dr. rer. nat. (Doctor rerum naturalium) or Ph.D. in Physics, cum laude**  
Ludwig-Maximilians-Universität München (LMU)  
Thesis: *The kinematic nature of baryons in the multi-phase circumgalactic media of high-redshift radio galaxies*  
Advisor: Dr. Carlos de Breuck, co-advisor: Dr. Joël Vernet
- 2014-2015**        **M.Sc. in Physics, cum laude**  
University of the Western Cape (UWC)  
Thesis: *The Effects of Environment on radio-loud AGN Activity in Stripe 82*  
Advisor: Prof. Dr. Matt J. Jarvis, co-advisor: Dr. Kim McAlpine
- 2010-2013**        **B.Sc. Honours in Astronomy and Physics**  
UCT  
Final-year Project: *The Effects of Ionospheric Scintillation on the Dilution of Precision in GPS Positioning*  
Advisor: Dr PJ Cilliers

## PUBLICATIONS

- First-authored and peer-reviewed:**    **S. Kolwa**, et al (2019) A&A, 625, 102  
*MUSE unravels the ionization and origin of metal enriched absorbers in the gas halo of a  $z = 2.92$  radio galaxy*
- S. Kolwa**, et al (2019) MNRAS, 482, 5156-5166  
*The relation between galaxy density and radio jet power for 1.4 GHz VLA selected AGN in Stripe 82*

For full list of publications:  
See ORCID (ID 0001-9821-4987) See Google Scholar  
See NASA/ADS

**In prep.**

**S. Kolwa**, et al (2019) - Web-link to current state of paper in preparation  
*Kinematically quiescent neutral carbon within the CGM gas of distant radio galaxies as exhibited by ALMA*

**GRANTS  
& AWARDS**

- Granted ESO Ph.D. Studentship funding for 3.5 years (Aug 2016- Dec 2019)
- Selected as one of 400 for the International Max Planck Research School (IMPRS) in Astrophysics Ph.D. program (2016)
- Awarded SKA (Square Kilometer Array) Undergraduate and M.Sc. Scholarships (2011-2015)

**OBSERVING RUNS**

- Obtained Period 100 ESO observations over two-weeks with the Atacama Pathfinder Experiment Telescope (APEX) in San Pedro de Atacama, Chile (2017)
- Procured long-slit spectroscopic observations using the Radcliffe 1.9-m Telescope on two separate observing runs at the South African Astronomical Observatory (SAAO) in Sutherland, South Africa (2012)

**COLLABORATIONS**

- Active member of a GMRT science working group
- Part of a working group focussed on observational and theoretical studies of *High Redshift Radio Galaxies* led by Carlos de Breuck (ESO)
- Working member of the large MeerKAT extragalactic science team called *MIGHTEE* (MeerKAT International GigaHertz Tiered Extragalactic Exploration) led by M.J. Jarvis (Oxford University/UWC) and R. Taylor (UCT/IDIA)

**MEDIA & PRESS**

- Gave an public talk about radio galaxies for the *SAAO Open Night* series  
Web-link to the video
- Featured in an interview on *ESOCast* Episode 149: *Fast Track Your Career with the ESO Studentship Programmes*  
Web-link to the episode
- Authored a popular science article for the *Mail & Guardian* (South Africa) entitled *Power answer in black-holes?"*  
Web-link to the article

**TALKS  
DELIVERED**

- Astrophysics Seminar (Nov 2019)  
ETH, Zurich, Switzerland  
Title: *Peering into the Gaseous Nebulae of High-redshift Radio Galaxies with ALMA and MUSE*
- OPINAS (Optical Near Interpretive Astronomy) Seminar (Nov 2019)  
Max Planck Institute for Extraterrestrial Physics (MPE), Garching, Germany  
Title: *Peering into the Gaseous Nebulae of High-redshift Radio Galaxies with ALMA and MUSE*
- *Modeling Meerkats* Workshop (July 2019)  
Hazyview, Mpumalanga  
Title: *Observational constraints on radio-mode feedback combining MeerKAT with optical and mm/sub-mm data*

- *Multi-messenger Astronomy with SKA precursors and pathfinders* Workshop (May 2019)  
Aveiro, Portugal  
Title: *MUSE unravels the ionisation and origin of metal-enriched absorbers in the gas halo of a  $z = 2.92$  radio galaxy*
- *Australia-ESO* Conference (Feb 2019)  
Sydney, Australia  
Title: *MUSE reveals metal-enriched absorbers in the circum-galactic medium (CGM) of a radio galaxy at  $z = 2.92$*
- *ESO Gas Matters* Seminar (Feb 2019)  
ESO Garching, Germany  
Title: *MUSE reveals metal-enriched absorbers in the CGM of a radio galaxy at  $z = 2.9$*
- *Walking the Line* Meeting (Mar 2018)  
Goldwater Centre, Arizona State University, USA  
Title: *Dissecting the multi-phase haloes of high redshift radio galaxies with ALMA and MUSE*
- *ESO AGN Club* Seminar (Feb 2018)  
ESO Garching, Germany  
Title: *Growing evidence for a merger within the extended halo of radio galaxy, MRC 0943-242*
- *What Matters Around Galaxies* Conference (Jul 2017)  
Durham University, United Kingdom  
Title:  *$\text{Ly}\alpha$  and He II Emission in MRC 0943-242*
- *Dawn of Galaxies* Conference (Jan 2017)  
Oberurgl, Austria  
Title: *A  $z=2.92$  radio galaxy from an ALMA & MUSE perspective*
- *SKA Conference* (Dec 2016)  
Cape Town, South Africa  
Title: *The Galaxy Density 1.4 GHz radio luminosity function of Stripe 82 AGN*
- *SKA Conference* (Dec 2015)  
Stellenbosch, South Africa  
Title: *The Causal Link Between Environment and AGN Accretion Efficiency*
- *SKA Pathfinders and Radio Continuum Surveys (SPARCS)* (July 2015)  
Hazyview, South Africa  
Title: *The Effect of Environment on Black-Hole Accretion Properties*
- *SKA Conference* (Dec 2014)  
Stellenbosch, South Africa  
Title: *Determining the Environmental Influence on AGN Accretion Modes*

## PROFESSIONAL ACTIVITIES

- Lobbied funds for the *Astro Molo Mhlaba* project (2019 - present)
- Oversaw the voting process at the *ESO Open Panel Committee* meetings during proposal periods 109, 100 and 101 (2017-18)
- Coordinated the logistics for monthly talks at the *ESO Wine & Cheese Seminar* series (2017-18)
- Advocated for human capital development for the SKA through teaching introductory Astronomy to pupils at Elsie's River High School, Cape Town (2015-16)

## REFERENCES

Prof Dr. Russ Taylor  
Advisor & Project Lead  
Professor at IDIA  
russ@idia.ac.za

Dr. Carlos de Breuck  
Ph.D. Advisor  
Senior Scientist at ESO  
cdebreuc@eso.org

Prof. Dr. Matt Jarvis  
Master's Advisor  
Professor at Oxford University  
matt.jarvis@physics.ox.ac.uk

Dr. Theresa Falkendal  
Research Collaborator  
Postdoc at Potsdam University  
theresa.falkendal@pik-potsdam.de

Dr. Jarita Holbrook  
Mentor during Ph.D.  
Professor at UWC  
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Dr. Michelle Cluver  
Mentor during Master's  
Swinburne University  
mcluver@swin.edu.au