CAROLINE BERTEMES

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RESEARCH INTERESTS

Galaxy Evolution - Stellar populations and star formation histories, ISM phases and links to galactic properties, galaxy structure and kinematics; **Active Galactic Nuclei** - Demographics, accretion, multi-scale structure, connection to host galaxy

EDUCATION AND ACADEMIC EXPERIENCE

Postdoctoral Researcher, University of Heidelberg, DE *11/2020-present*
Member of the GALENA group lead by Dr. Dominika Wylezalek
at Astronomisches Rechen-Institut, Zentrum für Astronomie Heidelberg

PhD in Astrophysics, University of Bath, UK *11/2016-10/2020*
Thesis: "Weighing star-forming galaxies, component by component"
(Supervisor: Prof. Dr. Stijn Wuyts)

Master in Physics, ETH Zürich, Switzerland *2014-2016*
MSc Thesis in collaboration with the Harvard-Smithsonian CfA: "Where are the SMBHs hiding? : Broad line (non-)detection of ultramassive, slowly spinning BHs" *Spring 2016*
(Supervisors: Dr. Benny Trakhtenbrot, Prof. Dr. Kevin Schawinski, Dr. Martin Elvis)

Bachelor in Physics, ETH Zürich, Switzerland *2010-2014*

PEER-REVIEWED FIRST-AUTHOR PUBLICATIONS

- **Bertemes C.**, Wuyts S., submitted to MNRAS
  Scatter in the star-forming Main Sequence: The link to long-term star formation histories in SDSS-IV MaNGA galaxies

- **Bertemes C.**, Wylezalek D., Albán M., Aravena M., Baker W.M., Cazzoli S., Cicone C., Martín S., Schimek A., Wagg J., Wang W., 2023, MNRAS, 518, 5500
  MASCOT: molecular gas depletion times and metallicity gradients - evidence for feedback in quenching active galaxies

- **Bertemes C.**, Wuyts S., Lutz D., Förster Schreiber N.M., Genzel R., Minchin R.F., Mundell C.G., Rosario D., Saintonge A., Tacconi L., 2018, MNRAS, 478, 1442
  Cross-calibration of CO- vs dust-based gas masses and assessment of the dynamical mass budget in Herschel-SDSS Stripe82 galaxies

- **Bertemes C.**, Trakhtenbrot B., Schawinski K., Done C., Elvis M., 2016, MNRAS, 463, 4041
  Testing the completeness of the SDSS colour selection for ultramassive, slowly spinning black holes

TALKS AND WORKSHOPS (SELECTION):

- "Cosmic Dawn with the JWST – Cycle 1 lessons and plans for Cycle 2", Ringberg, Germany *10/2022*
  A hands-on session with q3dfit, a powerful new PSF deconvolution and spectral analysis package
- "What drives the growth of black holes: a decade of reflection", Reykjavik, Iceland *09/2022*
  The decline of star formation: Linking molecular gas, outflows & metallicity gradients
- Meeting of the European Astronomical Society (EAS), Valencia, Spain *06/2022*
  The decline of star formation: Linking molecular gas, outflows & metallicity gradients

- UK talk tour - ICG Portsmouth, University of Bath, Cardiff University, University of Southampton, University College London, KICC Cambridge *06/2022*
  The decline of star formation: Exploring molecular gas, outflows and the early history of star formation
- "Large-volume spectroscopic analyses of AGN and star-forming galaxies in the era of JWST", STScI Baltimore (online), US *03/2022*
  The MIR fitting capabilities of q3dfit, a PSF deconvolution and spectral analysis tool in the wake of JWST
- "Young Astronomers on Galactic Nuclei (YAGN)", Copenhagen (online), Denmark *09/2021*
  MASCOT: The link between molecular gas and radially resolved galaxy properties in SDSS-IV MaNGA
- National Astronomy Meeting (NAM), Bath (online), UK *07/2021*
  MASCOT: The link between molecular gas and radially resolved galaxy properties in SDSS-IV MaNGA AGN
- "Extragalactic Spectroscopic Surveys: Past, Present and Future of Galaxy Evolution", Santiago, Chile (cancelled due to COVID-19 outbreak) *10/2020*
  Scatter in the star-forming main sequence: A remnant of long-term variations in stellar mass growth?
- "Birth, life and fate of massive galaxies and their central beating heart", Favignana, Italy *09/2018*
  CO- vs dust-based gas masses and assessment of the dynamical mass budget
- "Synergy between low and high redshift galaxy evolution studies in the era of JWST and EUCLID", Noordwijk, Netherlands *07/2018*
  Cross-calibrating CO- and dust-based gas masses while dynamically assessing the mass budget
- "Galaxy Evolution across time", Paris, France *06/2017*
  Cross-calibrating CO- and dust-based gas masses and their dependence on environment
- High Energy Astrophysics Seminar, Harvard-Smithsonian CfA, Cambridge, US *09/2016*
  Are we missing ultramassive, slowly spinning Black Holes in the SDSS colour selection?
  URL: `https://www.youtube.com/channel/UCMFEeX24_lviXNhek5-FFLA`

GRANTS

University of Bath Alumni Fund Travel Bursary(250 GBP) *06/2018*
Conference: "Birth, life and fate of massive galaxies and their central beating heart", Italy, Sept 3-7 2018 (complementary to the RAS grant below)

ESA travel support from conference organisers (200 Euro) *05/2018*
Conference: "Synergy between low and high redshift galaxy evolution studies in the era of JWST and EUCLID ", Netherlands, July 2018

RAS grant (240 GBP) *04/2018*
Conference: "Birth, life and fate of massive galaxies and their central beating heart", Italy, Sept 3-7 2018

Santander Postgraduate Mobility Award (950 GBP) *06/2017*
2-week working visit to the MPE in Garching near Munich (Germany)

OBSERVING PROPOSALS

- "Deep grism spectroscopy of the complex environment around an extremely red quasar within an ultramassive host at z=3", PI, submitted for JWST Cycle 2 01/2023
- "The interplay between H2, HI, dust and metals: calibrating a recipe to study the environmental impact on gas properties of galaxies", Co-I (PI: Dr. Stijn Wuyts), ∼24 hours allocated on Arecibo *03/2017*

Teaching and mentoring

- Bachelor thesis supervision - Simon Flesch (HeidelbergU): "The link between star formation histories and galaxy morphologies" — *Autumn 2022*
- Summer project supervision - Wenjun Chang (USTC): "FUEL - Cold gas properties of 10k nearby galaxies: the relation to galaxy structure" — *Summer 2019*
- Master thesis supervision - Emily Hunt & Morris Stranger (UBath): "Inference of photometric galaxy redshifts with a mixture density neural network" — *Summer 2018*
- Teaching assistant for the courses: Introduction to Astrophysics, Waves/Oscillations/Optics, Computational Labs (Python) — *Spring 2017-11/2018*
- Peer mentor under the University of Bath's scheme for 1st year students — *10/2017-2019*

Outreach

- Workshop on black holes at the Girls' Day Germany — *April 2021, 2022*
  Co-leading a workshop for 5th/6th graders, designing a crafting activity (model of an Active Galactic Nucleus), participating in a Meet & Greet with physicists
- Science activities at the WOMAD festival with the Institute of Physics — *27-28/07/2019*
  Guiding drop-in workshops, designing a "Spot the habitable planet" activity
- Leading science activities on light in rotation format in local primary schools — *11/2016-09/2018*
  Participated in 10 events, each time guiding one of 5 workshops for 2 hours
  PI: Dr. Ventsislav Valev; Sponsors: Royal Society, STFC, Thorlabs, Zeiss

Service

- Referee for *The Astrophysical Journal* — *01/2019-now*
- Organiser of the "Cake in the Garden" meetings at ARI Heidelberg — *2021-now*
- Organiser and chair of the PhD/Postdoc Research Lunches in Bath — *11/2018-2019*
- Member of the Staff/Student Liaison Committee (Faculty of Science in Bath) — *11/2017-2020*
- Co-organisor of the Bath-Bristol-Exeter-Cardiff student seminars (BBECss): Conference for astrophysics PhD students from the GW4 institutions — *01/2017-2020*
- Member of the Juno / Athena SWAN committee for gender equality (Physics Department of the University of Bath) — *11/2016-2019*

Skills

Languages	*Native*: Luxembourgish; *Fluent*: English, French, German
Programming	*Proficient*: Python, LaTeX, bash, SQL, HTML; *Intermediate*: C++
Software	*Proficient*: GILDAS-CLASS, `Prospector`, BAGPIPES, CLOUDY; *Basic*: `XSPEC`
Technical experience	Bayesian statistics with MCMC, spectral analysis (optical + far-IR / radio), Open-MPI parallel processing, sbatch & SLURM queued HPC computing
Observational experience	Carrying out remote co-observations with the ARO (> 100h), data reduction of CO spectra

References

Available upon request