Dr Ahmad A. Ali

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Employment

2023 – present **Postdoctoral Researcher**, University of Cologne, Germany
PI: Prof. Stefanie Walch-Gassner

2019 – 2023 **Postdoctoral Research Fellow**, University of Exeter, UK
PI: Prof. Clare Dobbs

2018 – 2019 **Postdoctoral Research Associate**, University of Exeter, UK
PI: Prof. Tim Harries

Education

2014 – 2018 **PhD Physics**, University of Exeter, UK
Formation and feedback processes of massive stars in clusters
Supervisor: Prof. Tim Harries

2010 – 2014 **MSci Astrophysics**, University College London, UK
Master's thesis: *Far-infrared spectroscopy of planetary nebulae with Herschel SPIRE*
Supervisor: Prof. Bruce Swinyard

Research expertise

- Star/cluster formation
- Stellar feedback in the ISM - photoionization, radiation pressure, winds, supernovae
- Numerical hydrodynamics - grid, smoothed particle hydrodynamics
- Monte Carlo radiative transfer
- Synthetic observations – recombination/forbidden lines, free–free, dust continuum
- Experienced with Fortran, Python, MPI, OpenMP, Git. RHD codes: TORUS, SPHNG, FLASH
- Referee for the MNRAS journal

Awards

Observations:

2023 (Cycle 10) ALMA: 129 hours to observe low-metallicity dwarf galaxies (as co-I, PI: L Hunt)

Computing time on UK DiRAC supercomputers:

2019 – 2022 10 million core-hours (co-I sub-project in Exeter group submission, PI: MR Bate)

2020 – 2021 2.16 million core-hours (co-I in Director's Discretionary Award, PI: TJ Haworth)

2017 – 2020 3.5 million core-hours (co-I sub-project in Exeter group submission, PI: MR Bate)

Conference organisation

LOC	*Sep 2024*	Annual Meeting of the German Astronomical Society University of Cologne, Germany
SOC	*Jul 2021*	National Astronomy Meeting session on Cosmic Star Formation online/University of Bath, UK
LOC	*Jun 2019*	14th International SPHERIC SPH Workshop University of Exeter, UK
LOC	*Aug 2016*	Star Formation 2016 University of Exeter, UK

Supervision and teaching

2023	Tutorial organiser and lecture cover for Computational Astrophysics Master's course
2020 – 2021	Co-supervising MPhys project for 2 students (*Identifying supernovae shells in galaxy simulations*)
2018 – 2019	Maths problems class organiser (70 hours)
2015 – 2018	Maths problems class (50 hours/yr), Physics problems class (40 hours/yr)
2014 – 2018	Physics lab demonstrator (80 hours/yr)

Research talks

Invited seminars:

Nov 2023	Lund Observatory, Sweden
Feb 2023	University of Oxford, UK
Sep 2022	Princeton University, USA
Nov 2018	University of Kent, UK

Selected conference talks since 2018:

Mar 2024	Radiative Transfer in Astrophysics RT24 Heidelberg University, Germany
Oct 2023	Surveying the Milky Way: the Universe in Our Own Backyard Caltech, USA
May 2023	Olympian Symposium on Star Formation in the Era of JWST Paralia Katerini, Greece
Sep 2022	Wheel of Star Formation Prague, Czech Republic
Jul 2022	A Holistic View of Stellar Feedback and Galaxy Evolution Ascona, Switzerland
Apr 2022	Bringing Stellar Evolution and Feedback Together Lorentz Centre, Leiden, Netherlands
May 2021	ISM 2021 Beirut, Lebanon (online)

Mar 2020 Modelling High-Mass Stellar Feedback
University of Tübingen, Germany

Sep 2019 From Gas to Stars: The Links between Massive Star and Star Cluster Formation
York, UK

Aug 2018 Star Cluster Formation: Mapping the first few Myrs
Université Grenoble Alpes, France

Publications (view on ADS)

First author

1. *Star cluster formation and feedback in different environments of a Milky Way-like galaxy*
Ali A. A., Dobbs C. L., Bending T. J. R., Buckner A. S. M., Pettitt A. R., 2023, MNRAS, 524, 555

2. *Stellar winds and photoionization in a spiral arm*
Ali A. A., Bending T. J. R., Dobbs C. L., 2022, MNRAS, 510, 5592

3. *The growth of H II regions around massive stars: the role of metallicity and dust*
Ali A. A., 2021, MNRAS, 501, 4136

4. *Massive star feedback in clusters: variation of the FUV interstellar radiation field in time and space*
Ali A. A., Harries T. J., 2019, MNRAS, 487, 4890

5. *Modelling massive-star feedback with Monte Carlo radiation hydrodynamics: photoionization and radiation pressure in a turbulent cloud*
Ali A., Harries T. J., Douglas T. A., 2018, MNRAS, 477, 5422

Co-author

1. *Bringing Stellar Evolution and Feedback Together: Summary of Proposals from the Lorentz Center Workshop*
Geen S., Agrawal P., Crowther P. A., Keller B. W., de Koter A., Keszthelyi Z., van de Voort F., **Ali A. A.**, et al., 2023, PASP, 135, 021001

2. *The evolution of protoplanetary discs in star formation and feedback simulations*
Qiao L., Haworth T. J., Sellek A. D., **Ali A. A.**, 2022, MNRAS, 512, 3788

3. *The impact of pre-supernova feedback and its dependence on environment*
McLeod A. F., **Ali A. A.**, et al., 2021, MNRAS, 508, 5425

4. *Shape Analysis of HII Regions – II. Synthetic Observations*
Campbell-White J., **Ali A. A.**, Froebrich D., Kume A., 2020, MNRAS, 496, 4311

5. *The TORUS radiation transfer code*
Harries T. J., Haworth T. J., Acreman D., **Ali A.**, Douglas T., 2019, A&C, 27, 63

6. *Radiation-hydrodynamical simulations of massive star formation using Monte Carlo radiative transfer - II. The formation of a 25 solar-mass star*
Harries T. J., Douglas T. A., **Ali A.**, 2017, MNRAS, 471, 4111