# Sarah M. R. Jeffreson


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## Employment/education

2020– **ITC Fellow, Harvard-Smithsonian Center for Astrophysics**, *Harvard University,* Cambridge MA, United States

2016–2020 **PhD student, International Max Planck Research School for Astrophysics**, *University of Heidelberg,* Heidelberg, Germany
Thesis topic: Which physical processes drive the evolution of giant molecular clouds?
Supervisor: J. M. Diederik Kruijssen

2015–2016 **MSc**, *Gonville and Caius College, University of Cambridge,* Cambridge, UK (First-class honours)
Thesis topic: Dynamical models of flattened, rotating globular clusters
Supervisors: Jason L. Sanders and N. Wyn Evans

2012–2015 **BA Hons Physics**, *Gonville and Caius College, University of Cambridge,* Cambridge, UK

2010–2011 **International Baccalaureate**, *Methodist Ladies' College,* Melbourne, Australia

## Relevant awards and funding

2020 **ITC Fellowship**, *Harvard University*

2017 **NEON Observing School scholarship**, *University of Copenhagen and La Palma Observatory*

2015 **Research funding at Karl Remeis Sternwarte**, *University of Erlangen-Nuernberg*

2014 **Research in Industrial Projects for Students scholarship**, *Institute of Pure and Applied Mathematics, UCLA*

2014 **Research funding in the optics research group**, *Glasgow University*

2013-2016 **Scholarship for continued academic excellence, Gonville and Caius College**, *Cambridge University*

2013 **Amgen Scholars Programme scholarship**, *Karolinska Institutet*

2011 **The Australian Student Prize**

## Refereed publications

2017– 7 first-author, 9 total

**On the scale-height of the molecular gas disc in Milky Way-like galaxies,** Jeffreson, S. M. R., Sun, J., Wilson, C. D., **MNRAS submitted** (2022)

**Introducing EMP-Pathfinder: modelling the simultaneous formation and evolution of stellar clusters in their host galaxies,** Reina-Campos, M., Keller, B. W., Kruijssen, J. M. D., Gensior, J., Trujillo-Gomez, S., Jeffreson, S. M. R., Pfeffer, J. L., Sills, A., **MNRAS submitted** (2022)

**Momentum feedback from marginally-resolved HII regions in isolated disc galaxies,** Jeffreson, S. M. R., Krumholz, M. R., Fujimoto, Y., Armillotta, L., Keller, B. W., Chevance, M., Kruijssen, J. M. D., **MNRAS, 505**, 3470 (2021b)

**A scaling relation for the molecular cloud lifetime in Milky Way-like galaxies,** Jeffreson, S. M. R., Keller, B. W., Winter, A. J., Chevance, M., Kruijssen, J. M. D., Krumholz, M. R., Fujimoto, Y. **MNRAS 505**, 1678 (2021a)

**The role of galactic dynamics in shaping the physical properties of giant molecular clouds in Milky Way-like galaxies,** Jeffreson, S. M. R., Kruijssen, J. M. D., Keller, B. W., Chevance, M., Glover, S. C. O., **MNRAS, 498**, 385 (2020)

**The dynamical evolution of molecular clouds near the Galactic Centre - II. Spatial structure and kinematics of simulated clouds,** Kruijssen, J. M. D. et al. (incl. SMRJ, **MNRAS, 484**, 5734 (2019)

**The lifecycle of molecular clouds in nearby star-forming disc galaxies,** Chevance, M. et al. (incl. SMRJ, **MNRAS** submitted (2019)

**On the physical mechanisms governing the cloud lifecycle in the Central Molecular Zone of the Milky Way,** Jeffreson, S. M. R., Kruijssen, J. M. D., Krumholz, M. R., Longmore, S. N. **MNRAS, 478**, 3380 (2018b)

**A general theory for the lifetimes of giant molecular clouds under the influence of galactic dynamics,** Jeffreson, S. M. R., Kruijssen, J. M. D., **MNRAS, 476**, 3688 (2018a)

**The Gaia-ESO Survey: dynamical models of flattened, rotating globular clusters,** Jeffreson, S. M. R., Sanders, J. L., Evans, N. W., Williams, A. A., Gilmore, G. F. et al. **MNRAS, 469**, 4740 (2017)

## Conferences, seminars and colloquia

Feb. 2017– 5 Invited Talks, 5 Colloquia, 9 Contributed Talks, 6 Seminar Talks

Mar. 2022 **MSS Seminar**, University of Wisconsin-Madison, USA (invited seminar)

Jan. 2022 **MPA Seminar**, Munich, Germany (invited seminar)

Jan. 2022 **AAS Winter meeting**, (contributed talk)

Dec. 2021 **Weekly Seminar**, ANU, Canberra, Australia (invited seminar)

Jul. 2021 **Ringberg series**, (contributed talk)

Jun. 2021 **AAS Summer meeting**, (contributed talk)

May 2021 **ISM 2021: Structure, characteristic scales, and star formation**, Beirut (contributed talk)

Oct. 2020 **ITC Colloquium**, Harvard, USA (invited colloquium)

Jul. 2020 **ARI Colloquium**, Heidelberg, Germany (colloquium)

Nov. 2019 **Harvard-Heidelberg workshop on the Physics of Star Formation: Linking Observations and Simulations**, Harvard, USA (contributed talk)

Nov. 2019 **Seminar at the ITC**, Harvard, USA (seminar)

Nov. 2019 **SFIR Seminar**, Princeton, USA (seminar)

Sep. 2019 **Through Dark Lanes to New Stars, celebrating the career of Prof. Charles Lada**, Crete, Greece (contributed talk)

Jun. 2019 **Linking the Milky Way and Nearby Galaxies**, Helsinki, Finland (contributed talk)

Jun. 2019 **Institute for Theoretical Astrophysics Blackboard Colloquium**, Heidelberg, Germany (colloquium)

Nov. 2018 **Hendrik van de Hulst Centennial Symposium: The Interstellar Medium of Galaxies, Status and Future Perspectives**, Leiden, The Netherlands (contributed talk)

Jul. 2018 **The Laws of Star Formation: From the Cosmic Dawn to the Present Universe**, Cambridge, UK (contributed talk)

Jun. 2018 **The Multi-Scale Physics of Star Formation and Feedback during Galaxy Formation**, Heidelberg, Germany (invited talk)

Jun. 2017 **Galactic Star Formation with Surveys**, Heidelberg, Germany (contributed talk)

Jul. 2017 **Linking Observations and Theory Across the Scales of Star Formation in Galaxies**, Sexten Centre for Astrophysics (poster)

Apr. 2017 **SFB 881 Seminar**, Heidelberg, Germany (seminar)

Feb. 2017 **The Physics of the ISM**, Cologne, Germany (poster)

## Teaching experience

2019 **Experimental Physics II, Tutor to class of 20**, *University of Heidelberg,* Electrostatics, Electrodynamics, Electromagnetism, Optics, Special Relativity

2018–2019 **Experimental Physics I, Tutor to class of 20**, *University of Heidelberg,* Mechanics and Thermodynamics

## Scientific responsibilities held

2021–2022 **ITC Colloquium Organising Committee**

2020 **ITC Fellowship Selection Committee**

2018 **Conference Local Organising Committee**, *The Multi-Scale Physics of Star Formation and Feedback during Galaxy Formation,* University of Heidelberg

2017–2019 **Co-investigator on ALMA proposals**, *Cycles 5, 6 and 7,* Principal Investigators Steven N. Longmore, Mélanie Chevance, Alexander P. S. Hygate

## Refereeing

May 2019– **Referee**, *Monthly Notices of the Royal Astronomical Society*

## Programming languages

C/C++, Bash, Python, MATLAB, HTML/CSS