

CURRICULUM VITAE

CONTACT INFORMATION McGill Space Institute 207 adelie.gorce@mcgill.ca
 3550 University street ORCID, GitHub
 Montreal, QC H3A 2A7 Website

RESEARCH EXPERIENCE

McGill University **Montreal, QC, Canada**
Postdoctoral researcher - Trottier chair fellow *since Nov. 2020*

Université Paris-Saclay & Imperial College London
Postgraduate research student in cosmology *2017-2020*

University College London **London, UK**
Master thesis on “Observational probes of inflationary theory” *2017*

Institut d’Astrophysique Spatiale **Orsay, France**
Undergraduate research project on “Combining observational probes of cosmic reionisation” *2016*

EDUCATION

Université Paris-Saclay & Imperial College London
PhD in Astrophysics *2017-2020*
 Thesis: “Cosmological signatures of the Epoch of Reionisation”
 Supervisors: Marian Douspis & Jonathan Pritchard

Imperial College London **United Kingdom**
MSc in Physics, obtained with Distinction (> 70%) *2016-2017*

CentraleSupélec, Grande Ecole **France**
Bachelor in Engineering & General Science – Diplôme d’ingénieur centralien *2013-2017*

TEACHING EXPERIENCE

Classroom experience

CHAMP camp, Research summer school **Philadelphia, PA, USA**
Teaching assistant in Cosmology *June 2022*

Imperial College London **United Kingdom**
Teaching assistant *2017-2020*

- Fourier analysis, Differential equations & Thermodynamics
- Tutor groups of 20 Year 2 BSc in Physics students, 4hrs/week

Student supervision

- Ivelin Georgiev, PhD, Stockholm University, Sweden *Since April 2021*
- Jade Ducharme, Year 3 undergrad at McGill → Brown University (PhD) *Summer 2021*
- Joëlle-Marie Bégin, Year 3 undergrad at McGill → Princeton University (PhD) *Summer 2021*

Mentoring

- Mentor, Physics Mentorship Program, McGill University (pastoral care) *Since Oct. 2021*
Regular meetings with a Physics postgrad mentee.
- Mentor, MSI summer research program, McGill University *Summer 2021*
Gave talks on research and soft skills to give students the key to a successful summer of research.
- Mentee, Women & Science society, France *2018-2020*

OUTREACH EXPERIENCE

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- *Space explorers* volunteer, Science talks in Montréal classrooms *Since 2021*
 - Classroom talk as part of the “*An astronomer in your classroom*” project, Montréal *May 2021*
 - Podcast episode on radio astronomy, with Polytechnique Montréal *March 2021*
 - *I’m a scientist, get me out of here*, online chatroom answering questions from pupils *March 2019*
 - Volunteer for the *SpaceBus France*, pop-up festival about astronomy *2018*
 - *Imperial festival*, stall about the Planck satellite and the SKA *2018 & 2019*
 - Postgraduate outreach ambassador, Imperial College *2018-2020*
 - Volunteer at a primary school for an “Introduction to engineering” class *2015*

AWARDS & GRANTS

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- A&A Best PhD Thesis Award** *2022*
Award for outstanding research published in A&A by individuals in the initial stages of their careers.
Awarded at the EAS annual meeting in Valencia, Spain, in June 2022.
- Trottier Astrophysics Prize Postdoctoral Fellowship** *2020*
- Royal Astronomical Society Travel grant** *2019*
- Bourse de thèse** de l’Ecole doctorale Astronomie & Astrophysique en Ile de France *2017*
- PhD funding** from the Science & Technology Facilities Council (UK) *2017*
GBP 18 000 to cover College tuition fees. 4 students awarded among 100 applicants.

COMMUNITY INVOLVEMENT

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- Referee for the *Physical Reviews*, *Nature* and *MNRAS*
 - Member of the McGill Space Institute (MSI) seminar committee (2022-2023)
 - Judge for the Physics Undergraduate summer research showcase, McGill University (2022)
 - Member of the MSI Undergraduate research awards selection committee (2021)
 - Student representative for the astrophysics group, Imperial College London, 2018

International collaborations

- Square Kilometre Array (SKA)**, Member of the Cosmic Dawn Science working group *Since 2018*
- Hydrogen Epoch of Reionization Array (HERA)** - Permanent member *Since 2020*
- Maintains and updates the power spectrum analysis code `hera_pspec` (available online)
 - Contributes to the theoretical interpretation of observations and to the development of the related Bayesian analysis framework `pspec_like`

Societies

International Astronomical Union (IAU, Junior member since 2022), Canadian Astronomical Society (CASCA, since 2022), Royal Astronomical Society (RAS, since 2018), Société Française d’Astronomie & d’Astrophysique (SF2A, since 2021), European Astronomical Society (EAS, since 2021).

Conference organisation

- 4th global 21 cm workshop, Berkeley, CA, USA (SOC member), see website October 2022
- CMB+EoR workshop, McGill University, QC, Canada (main organiser, website) July 2022
- SAZERAC gulp on the 21 cm signal (co-chair, website) March 2022
- SAZERAC sip: CMB and reionisation, online conference (main organiser, website) April 2021
- SAZERAC sip: The 21 cm signal, online conference (SOC member, website) January 2021

ADDITIONAL SKILLS

Programming & Data analysis

- Programming languages (Python, C++, Fortran) & parallelised computing (openMP)
- Bayesian analysis methods & techniques (MCMC: `emcee`, CosmoMC, 21CMMC)
- Cosmology tools: Reionisation simulations (21CMFAST, AMBER), theory predictions (CAMB, CLASS).

Languages

French (native speaker), English (fluent), German (conversational), Russian & Italian (notions).

PUBLICATIONS

Total number of citations: 71.

1. The HERA collaboration, including **Gorce, A.**, *Improved Constraints on the 21 cm EoR Power Spectrum and the X-Ray Heating of the IGM with HERA Phase I Observations*, submitted to ApJ, [arXiv:2210.04912](#).
2. **Gorce, A.**, Ganjam, S., Liu, A., Murray, S. G., and the HERA collaboration *What does an interferometer really measure? Including instrument and data characteristics in the reconstruction of the 21 cm power spectrum*, submitted to MNRAS, [arXiv:2210.03721](#).
3. Nikolić, I., Mesinger, A., Qin, Y., **Gorce, A.**, *Inferring reionization and galaxy properties from the patchy kinetic Sunyaev-Zel’dovich signal*, submitted to MNRAS.
4. Lacasa, F., Aubert, M., Baratta, P., Carron, J., **Gorce, A.**, Gouyou Beauchamps, S., Legrand, L., Moradinezhad Dizgah, A., Tutusaus, I., *Efficient Computation of Super-Sample Covariance for Stage IV Galaxy Surveys*, submitted to A&A, [arXiv:2209.14421](#).
5. La Plante, P., Mirocha, J., **Gorce, A.**, Lidz, A., & Parsons, A., *Prospects for 21cm-Galaxy Cross-Correlations with HERA and the Roman High-Latitude Survey*, submitted to ApJ, [arXiv:2205.09770](#).
6. **Gorce, A.**, Douspis, M., & Salvati, L., *Retrieving cosmological information from small-scale CMB foregrounds II. The kinetic Sunyaev Zel’dovich effect*, A&A 662, A122 (2022). [arXiv:2202.08698](#).
7. Bégin, J.-M., Liu, A., & **Gorce, A.**, *Joint constraints on reionization: a framework for combining the global 21 cm signal and the kinetic Sunyaev-Zeldovich effect*, PRD 105, 083503 (2022). [arXiv:2112.06933](#).
8. Douspis, M., Salvati, L., **Gorce, A.**, & Aghanim, N., *Retrieving cosmological information from small-scale CMB foregrounds I. The thermal Sunyaev Zel’dovich effect*, A&A 659, A99 (2022). [arXiv:2109.03272](#).
9. Gouyou Beauchamps, S., Lacasa, F., Tutusaus, I., Aubert, M., Barratta, P. & **Gorce, A.**, *Impact of survey geometry and super-sample covariance on future photometric galaxy surveys*, A&A (2022). [arXiv:2109.02308](#).

10. **Gorce, A.**, Hutter, A., & Pritchard, J. R., *Using the sample variance of 21cm maps as a tracer of the ionisation topology*, A&A 653, A58 (2021). [arXiv:2102.04352](#).
11. **Gorce, A.**, Ilić, S., Douspis, M., Aubert, D., & Langer, M., *Improved constraints on reionisation from CMB observations: A parameterisation of the kSZ effect*, A&A 640, A90 (2020). [arXiv:2004.06616](#).
12. **Gorce, A.** & Pritchard, J. R., *Studying the morphology of reionisation with the triangle correlation function of phases*, MNRAS 489, 1321 (2019). [arXiv:1903.11402](#).
13. **Gorce, A.**, Douspis, M., Aghanim, N., & Langer, M., *Observational constraints on key-parameters of cosmic reionisation history*, A&A 616, A113 (2018). [arXiv:1710.04152](#).

TALKS & SEMINARS

Invited seminars

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| – Theory group seminar, Johns Hopkins University | Baltimore, MS, USA, <i>November 2022</i> |
| – Astrophysics seminar, Observatoire de Strasbourg | Strasbourg, France, <i>June 2022</i> |
| – Cosmology seminar, Institut d’Astrophysique Spatiale | Orsay, France, <i>May 2022</i> |
| – Cosmology & Gravitation meeting, Oskar Klein Centre | Stockholm, Sweden, <i>October 2021</i> |
| – Lunch talk, Kapteyn Astronomical Institute | Gröningen, NDL, <i>April 2021</i> |
| – Astrophysics seminar, Sussex university | Brighton, UK, <i>January 2021</i> |
| – Astrophysics seminar, Imperial College | London, UK, <i>January 2021</i> |
| – Lunch talk, McGill Space Institute | Montreal, Canada, <i>January 2021</i> |
| – Lunch talk, Kapteyn Astronomical Institute | Gröningen, NDL, <i>November 2019</i> |
| – Astrophysics group seminar, University of Melbourne | Melbourne, Australia, <i>August 2019</i> |

Invited talks

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| – 4th world summit on Exploring the Dark Side of the Universe | La Réunion, France, <i>Nov. 2022</i> |
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Contributed talks

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| – Global 21 cm workshop | Berkeley, CA, USA, <i>October 2022</i> |
| – CMB+EoR workshop | Montreal, QC, Canada, <i>July 2022</i> |
| – BCCP “Reionization & Cosmic Dawn” workshop | Berkeley, CA, USA, <i>March 2022</i> |
| – CMB France meeting (online) | <i>June 2021</i> |
| – SAZERAC sip on CMB tracers of cosmic reionisation, online conference. | <i>April 2021</i> |
| – SKA collaboration conference (plenary session, online). | <i>March 2021</i> |
| – Online <i>Third global 21cm workshop</i> | Cambridge, UK, <i>October 2020</i> |
| – SAZERAC online conference | <i>July 2020</i> |
| – <i>The First Billion Years of the Universe</i> | Indore, India, <i>January 2020</i> |
| – <i>Barefoot reionization</i> | Queensland, Australia, <i>July 2019</i> |
| – <i>Lines in the Large-Scale Structures</i> | Marseille, France, <i>July 2019</i> |
| – SKA France meeting | Paris, France, <i>December 2018</i> |
| – <i>From LSS to LSS</i> workshop | Orsay, France, <i>July 2018</i> |

Posters & flash talks

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| – Annual meeting of the European Astronomical Society (poster) | Valencia, Spain, <i>June 2022</i> |
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- IGM interconnections (lightning talk)
- Rise & Shine: galaxies in the Epoch of Reionization (poster)

Marseille, France, *July 2018*

Strasbourg, France, *June 2018*