

DR. ALEX COOPER

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Anton Pannekoek Institute, Science Park 904, 1098 XH, Amsterdam, Netherlands

WORK EXPERIENCE

Hintze Fellow

2023-2026

University of Oxford

Transients Subgroup, Hintze Centre for Astrophysical Surveys

EDUCATION

PhD Astrophysics

2018-2022

University of Amsterdam

Thesis: Multi-messenger and multi-wavelength signatures of compact object transients

Supervisors: Prof. Ralph Wijers & Dr. Antonia Rowlinson

MSc Astrophysics (Gravitation and Astroparticle track)

2016-2018

University of Amsterdam

Thesis: Cosmic rays from X-ray binary jets

Supervisor: Prof. Sera Markoff

Grade: 8.1/10 (Dutch grading scale)

BSc Physics and Philosophy

2013-2016

University of Nottingham

Thesis: Object permanence in Minkowski space-time

Grade: First class

PUBLICATIONS

Pulsar revival in neutron star mergers: multi-messenger prospects for the discovery of pre-merger coherent radio emission

Cooper, A. J., Gupta, O., Wadiasingh, Z., Wijers, R.A.M.J., Boersma, O., Andreoni, I., Rowlinson, A., Gourdji, K. (2023)

MNRAS, 2023, 519, 3923

Testing afterglow models of FRB 200428 with early post-burst observations of SGR 1935+2154

Cooper, A. J., Rowlinson, A., Wijers, R. A. M. J., Bassa, C., Gourdji, K., Hessels, J., van der Horst, A., Kondratiev, V., Michilli, D., Pleunis, Z., Shimwell, T., ter Veen, S. (2022)

MNRAS, 2022, 517, 5483

Coherent curvature radiation: maximum luminosity and high-energy emission

Cooper, A. J. & Wijers, R. A. M. J. (2021)

MNRAS Letters, 2021, 508, L32

High-energy cosmic rays from X-ray binary jets

Cooper, A. J., Gaggero, D., Markoff, S., Zhang, S. (2020)

MNRAS, 2020, 493, 3212

Multifrequency observations of SGR J1935+2154

Bailes, M., Bassa, C. G., Bernardi, G., Buchner, S., Burgay, M., Caleb, M., **Cooper, A. J.**, Desvignes, G., Groot, P. J., Heywood, I., Jankowski, F., Karuppusamy, R., Kramer, M., Malenta, M., Naldi, G., Pilia, M., Pupillo, G., Rajwade, K. M., Spitler, L., Surnis, M., Stappers, B. W., Addis, A., Bloemen, S., Bezuidenhout,

M. C., Bianchi, G., Champion, D. J., Chen, W., Driessen, L. N., Geyer, M., Gourdji, K., Hessels, J. W. T., Kondratiev, V. I., Klein-Wolt, M., Körding, E., Le Poole, R., Liu, K., Lower, M. E., Lyne, A. G., Magro, A., McBride, V., Mickaliger, M. B., Morello, V., Parthasarathy, A., Paterson, K., Perera, B. B. P., Pieterse, D. L. A., Pleunis, Z., Possenti, A., Rowlinson, A., Serylak, M., Setti, G., Tavani, M., Wijers, R. A. M. J., ter Veen, S., Venkatraman Krishnan, V., Vreeswijk, P., Woudt, P. A. (2021)
MNRAS, 2021, 503, 5367

Exploring neutrino and cosmic ray production in X-ray binary jets using multi-wavelength case studies
Kantzas, D., Markoff, S., **Cooper, A. J.**, Gaggero, D., Petropoulou, M., De La Torre Luque, P. (2022)
To be submitted to MNRAS

ASTRONOMER'S TELEGRAMS

A LOFAR high time resolution search for radio bursts from SGR 1935+2154
Bassa, C., Hessels, J., Kondratiev, V., Michilli, D., Pleunis, Z., **Cooper, A. J.**, Gourdji, K., Rowlinson, A., Wijers, R., (2020)
Astronomer's Telegram, ATel 13707

SELECTED TALKS

Oxford University (2022) - Invited SPIMAX Seminar
Istanbul University Observatory (2022) - Invited Institute Seminar
Flatiron Institute (2022) - Seminar in group meeting of B. Metzger & A. Beloborodov
Harvard University (2022) - Seminar in group meeting of R. Narayan
The George Washington University (2022) - Institute Seminar
AAS Winter meeting (2022) - Dissertation Talk (cancelled)
IAU Symposium 363 (2021) - Lightning talk
FRB2021 (2021) - Plenary talk
Istanbul Technical University (2021) - Institute Seminar
Nederlandse Astronomenclub (2019) - Best poster finalist talk

SUPERVISION & TEACHING

Primary supervisor of ASPIRE summer student Om Gupta on a project entitled *Exploring electromagnetic interaction of highly magnetised binary systems* - (Starting PhD at UT Austin in the fall w/ Pawan Kumar)
Daily TA supervisor of a total of 6 MSc-level observing projects on a range of topics using the Anton Pannekoek Observatory (2018-2020)

SUCCESSFUL OBSERVING PROPOSALS & GRANTS

Principal Investigator

1. LOFAR - single cycle - 2 triggers (8.8 hours) - Rapid follow-up of magnetar flares: the search for coherent radio emission
2. LOFAR - single cycle - 2 triggers (8.8 hours) - Rapid follow-up of magnetar flares: the search for coherent radio emission
3. LOFAR – DDT - 4 hours - Follow-up of SGR 1935+2145 as it enters an active phase
4. LOFAR – DDT - 4.4 hours - Low-frequency follow-up of SGR 1935+2154 as it enters a new phase

5. LOFAR - single cycle - 2 triggers (8.8 hours) - Rapid follow-up of magnetar flares: the search for coherent radio bursts
6. LOFAR - single cycle - 2 triggers (8.8 hours) - Rapid follow-up of magnetar flares: the search for coherent radio bursts
7. 500EUR - Conference funding LKBF (Leids Kerkhoven-Bosscha Fonds)
8. 1000EUR - External Visitor funding LKBF (Leids Kerkhoven-Bosscha Fonds)

Co-investigator

1. LOFAR – DDT - 6.5 hours - Continued LOFAR follow-up of SGR 1935+2154

SERVICE, MEMBERSHIP AND OUTREACH

Referee for the *Monthly Notices of the Royal Astronomical Society*

Member of the *Landelijke Onderwijs Commissie/NOVA Onderwijs Commissie* (LOCNOC; National Education Commission) overseeing BSc-PhD astronomy education in the Netherlands (2019 - 2022)

Student Member of AAS HEAD division

Organising Committee of the ASPIRE programme (MSc-PhD transition programme)

Hosted and organised public outreach livestreams during the pandemic

BSc Course Representative

SKILLS

Programming:

Python (numpy, scipy, astropy, pandas, sklearn), C++, Linux/Windows/Mac, Bash, Large-scale distributed computing, Numerical methods for differential equations

Languages:

English (native), Spanish (intermediate), Dutch (beginner)

INTERNATIONAL WORKSHOP & CONFERENCE ATTENDENCE

LOFAR Data School 2020

Asterics-Obelics International School 2019 (Astronomical Data Science with Python)

The New Era of Multi-messenger Astrophysics 2019

Compact Objects and Energetic Phenomena in the Multi-Messenger Era 2020

FRB2020 and FRB2021

REFERENCES

Prof. Ralph Wijers - PhD supervisor - University of Amsterdam, Netherlands
r.a.m.j.wijers@uva.nl

Prof. Sera Markoff - MSc thesis supervisor - University of Amsterdam, Netherlands
s.b.markoff@uva.nl

Assistant Prof. Antonia Rowlinson - PhD co-supervisor - University of Amsterdam, Netherlands
b.a.rowlinson@uva.nl

Assistant Prof. Alexander van der Horst - Collaborator - The George Washington University, Washington
D.C., USA
ajvanderhorst@gwu.edu