Yuxiang Qin

Curriculum vitae *(version: July 2021)*

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Academic History

2021.03 **ASTRO-3D Postdoctoral Researcher**, *The University of Melbourne (UniMelb)*, Australia.
Research Interests: First galaxies, 21-cm, Reionization, High-Redshift, Cosmological Simulation.
Advisor: Prof. J. Stuart B. Wyithe from UniMelb

2018.09 – 2021.02 **Postdoctoral Researcher**, *Scuola Normale Superiore (SNS)*, Italy.
Research Interests: 21-cm, reionization, first galaxies, CMB, Lyman-α forest, Bayesian Inference
Advisor: Prof. Andrei Mesinger from SNS.

2014.10 – 2018.07 **Ph.D. Astrophysics**, *UniMelb*, Australia.
Thesis: *Dark-ages Reionization And Galaxy formation Observables from Numerical Simulations.*
Supervisor: Prof. J. Stuart B. Wyithe from UniMelb.

2010.09 – 2014.06 **B.S. Astronomy**, *The University of Science and Technology of China (USTC)*, China.
Thesis: *UV Radiation from Stars.*
Supervisor: Prof. Jifeng Liu from the National Astronomical Observatories, Chinese Academy of Sciences (NAOC).

Awards/Computer Grants

2021.07 – 2022.06 **Supercomputing Time**, *2.1M CPU hours+*, XSEDE NSF, U.S., PI: Steven Murray from Arizona State University (ASU).

2021.07 – 2022.06 **Supercomputing Time**, *5.2M SU*, Gadi, National Computational Infrastructure, Australia.

2021.03 **Observational Time**, *NIRCam 53 hours*, James Webb Space Telescope (JWST) Cycle 1, PI: Pascal Oesch from The University of Geneva.

2021.03 **Observational Time**, *NIRCam 7.1 hours*, JWST Cycle 1, PI: Rohan Naidu from Harvard University.

2021.01 – 2021.07 **Supercomputing Time**, *5M CPU hours*, Centre for High Performance Computing, South Africa, PI: Mario Santos from The University of the Western Cape.

2020.12 – 2021.12 **Supercomputing Time**, *50k SU+*, XSEDE Startup NSF, U.S., PI: Steven Murray from ASU.

2019.11 **Supercomputing Time**, *100k CPU hours*, PRACE Preparatory.

2019.05 **Supercomputing Time**, *250k node (x68 CPU) hours*, CINECA - Italian SuperComputing Resource Allocation.

2018.04 **Postgraduate Writing-Up Award**, *AUD 5,000*, The Albert Shimmins Fund, UniMelb.

2016.10 **Jean Laby Ph.D. Travelling Scholarship**, *AUD 5,000*, UniMelb.

2016.08 **Science Abroad Travelling Scholarship**, *AUD 1,500*, UniMelb.

2016.05 **Supercomputing Time**, *500k CPU hours*, The Pawsey Supercomputing Centre.

2014.11 – 2018.4 **Goldsworthy Scholarship**, *AUD 30,000 p.a.*, UniMelb.

2014.10 – 2014.11 **Melbourne International Research Scholarship**, *AUD 25,392 p.a.*, UniMelb.

2014.10 – 2018.4 **Melbourne International Fee Remission Scholarship**, *AUD 32,224 p.a.*, UniMelb.

Published Articles (ORCID: 0000-0002-4314-1810)

- Y. Qin, A. Mesinger, S.E.I. Bosman, M. Viel.
  Reionization and galaxy inference from the high-redshift Lyα forest
  Monthly Notices of the Royal Astronomical Society (MNRAS; accepted), arXiv ID: 2101.09033.

- Y. Qin, A. Mesinger, B. Greig, J. Park.
  A tale of two sites -II: Inferring the properties of minihalo-hosted galaxies with upcoming 21-cm interferometers
  MNRAS (2021) 501 (4): 4748-4758.

- S.G. Murray, B. Greig, A. Mesinger, J.B.Muñoz, Y. Qin, J. Park, C.A. Watkinson.
  21cmFAST v3: A Python-integrated C code for generating 3D realizations of the cosmic 21cm signal
  Journal of Open Source Software (2020) 5 (54): 2582.

- Y. Qin, V. Poulin, A. Mesinger, B. Greig, S. Murray and J. Park.
  Reionization inference from the CMB optical depth and E-mode polarization power spectra
  MNRAS (2020) 499 (1): 550-558.

- Y. Qin, A. Mesinger, J. Park, B. Greig, J.B.Muñoz .
  A tale of two sites -I: Inferring the properties of minihalo-hosted galaxies from current observations
  MNRAS (2020) 495 (1): 123-140.

- M.A. Marshall, S.J. Mutch, Y. Qin G.B. Poole and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-XVIII. The high-redshift evolution of black holes and their host galaxies
  MNRAS (2020) 494 (2): 2747-2759.

- J.E. Davies, S.J. Mutch, Y. Qin, A. Mesinger, G.B. Poole and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-XVI. The thermal memory of Reionisation
  MNRAS (2019) 489 (1): 977-992.

- M.A. Marshall, S.J. Mutch, Y. Qin, G.B. Poole and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-XVII. Sizes, angular momenta and morphologies of high redshift galaxies
  MNRAS (2019) 488 (2): 1941-1959.

- Y. Qin, A.R. Duffy, S.J. Mutch, G.B. Poole, A. Mesinger and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-XV. Stellar evolution and feedback in dwarf galaxies at high redshift.
  MNRAS (2019) 487 (2): 1946-1963.

- S. Amarantidis, J. Afonso, H. Messias, B. Henriques, A. Griffin, C. Lacey, C.P. Lagos, V. Gonzalez-Perez, Y. Dubois, M. Volonteri, I. Matute, C. Pappalardo, Y. Qin, R. Chary and R.P. Norris.
  The first Super Massive Black Holes: indications from models for future observations
  MNRAS (2018) 485 (2): 2694-2709.

- Y. Qiu, J.S.B. Wyithe, P.A. Oesch, S.J. Mutch, Y. Qin, I.L. Rychard, J. Bouwens, M. Stefanon and G.D. Illingworth.
  Dependence of galaxy clustering on UV-luminosity and stellar mass at $z{\sim}4-7$.
  MNRAS (2018) 481 (4): 4885-4894.

- Y. Qin, A.R. Duffy, S.J. Mutch, G.B. Poole, P.M. Geil, A. Mesinger and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-XIV. Gas accretion, cooling and star formation in dwarf galaxies at high redshift.
  MNRAS (2018) 477 (1): 1318-1335.

- Y. Qin, S.J. Mutch, A.R. Duffy, P.M. Geil, G.B. Poole, A. Mesinger and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-XIII. AGN quenching of high-redshift star formation in ZF-COSMOS-20115.
  MNRAS (2017) 471 (4): 4345-4354.

- Y. Qin, S.J. Mutch, G.B. Poole, C. Liu, A.R. Duffy, P.M. Geil, P.W. Angel, A. Mesinger and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-X. The small contribution of quasars to reionization.
  MNRAS (2017) 472 (2): 2009-2027.

- Y. Qin, A.R. Duffy, S.J. Mutch, G.B. Poole, P.W. Angel, P.M. Geil, A. Mesinger and J.S.B. Wyithe.
  Dark-ages reionization and galaxy formation simulation-VIII. Suppressed growth of dark matter haloes during the Epoch of Reionization.
  MNRAS (2017) 467 (2): 1678-1693.

- Y Bai, J. Liu, J. Wicker, S. Wang, J. Guo, Y. Qin, L. He, J. Wang, Y. Wu, Y. Dong, Y. Zhang, Y. Hou, Y. Wang and Z. Cao.
  The UV Emission of Stars in LAMOST Survey. I. Catalogs
  The Astrophysical Journal Supplement Series (2018) 235 (1): 16.

- J. Guo, J. Liu, S. Wang, Y. Wu, and Y. Qin.
  An active M star with X-ray double flares disguised as an ultra-luminous X-ray source.
  Research in Astronomy and Astrophysics (2016) 16 (2): 034.

Presentations

2021.07 **Reionization and galaxy inference from the high-redshift Lyman Alpha forest**, *European Astronomical Society Annual Meeting*, Telecon.

2021.04 **Reionization inference from the CMB optical depth and E-mode polarization power spectra**, *SAZERAC: Reionisation and the CMB*, Telecon.

2021.03 **What Lyman Alpha forests tell us about reionization and high-redshift galaxies**, *2021 SKA Science Conference*, Telecon.

2021.03 **Reionization and galaxy inference from the high-redshift Lyman Alpha forest**, *XQR-30 General Meeting*, Telecon.

2020.12 **Inferring the properties of minihalo-hosted galaxies using 21-cm power spectra from the SKA**, *SKA CD/EoR Science Team*, Telecon.

2020.11 **Inferring the properties of minihalo-hosted galaxies from current observations and upcoming 21-cm interferometers**, *Galaxy Crawl (webinar)*, The University of Arizona, the US.

2020.01 **First sources of light**, *Next-Generation Cosmology with Next-Generation Radio Telescopes* Sexten, Italy & *The First Billion Years of the Universe* The Indian Institute of Technology Indore, India.

2019.09 **Minihalo galaxies at high redshifts**, *21cmFAST developer workshop*, SNS, Italy.

2019.09 **Including a second population in 21cmFAST**, *HERA Annual Meeting*, Cambridge, the UK.

2019.09 **Modelling the Cosmic Dawn**, *Seminars*, NAOC & Purple Mountain Observatory, China.

2019.06 **To Illuminate the Dark Ages**, *Astrophysics Colloquia*, UniMelb & Swinburne University of Technology, Australia.

2019.05 **21cm Cosmology and the first stars – yes! you need to know the baryonic physics**, *News from the dark*, The University of Montpellier, France.

2019.04 **Probing the 21-cm signature of first stars**, *The 2019 SKA Science Meeting*, Alderley Edge, the UK.

2018.06 **Massive black holes at high redshift**, *The 34th IAP Conference*, The Institut d'Astrophysique de Paris, France.

2018.06 **The contribution of ionising photons during the Epoch of Reionization**, *Rise and shine: galaxies in the epoch of reionization*, The Universite de Strasbourg, France.

2018.06 **Dark-ages Reionization And Galaxy formation Observables from Numerical Simulations**, *Seminar*, SNS, Italy.

2018.05 **Semi-analytic modelling of high-redshift supermassive blackholes**, *2018 Science Meeting of the Australian Research Council (ARC) Centre of Excellence for All-sky Astrophysics 3D (ASTRO 3D)*, The Australian National University (ANU), Australia.

2018.03 **The 2018 Antarctica Explorer**, *Seminar*, UniMelb, Australia.

2017.09 **AGN quenching of high redshift star formation in ZF-COSMOS- 20115**, *ACAMAR 3: Australia-China Workshop on Astrophysics*, Hobart, Australia.

2017.08 **Quasars and cosmic reionization**, *From Black Hole to Environment: Galaxy Evolution across Multiple Wavelengths*, ANU, Australia.

2017.07 **AGN quenching of high redshift star formation in *ZF-COSMOS-20115***, *The* 24^{th} *Astronomical Society of Australia (ASA) Annual Scientific Meeting*, ANU, Australia.

2017.02 **The small contribution of quasars to reionization**, *The* 11^{th} *Australian National Institute for Theoretical Astrophysics (ANITA) Workshop*, The University of Tasmania, Australia.

2016.10 **Dark-ages Reionization And Galaxy Observables from Numerical Simulations**, *Cosmology Seminar*, The Max-Planck-Institute for Astrophysics (MPA), Germany.

2016.02 **Suppressed Growth of Dark Matter Halos during the Epoch of Reionization**, *The* 10^{th} *ANITA Workshop*, Monash University, Australia.

Experiences

2021.06 **Outreach Talk**, *Physics Work Experience for Year 10 students*, UniMelb.

2021.03 **Coordinator**, *Astro Colloquia*, UniMelb.

2020.09 **Journal Referee**, *MNRAS*.

2020.05 **Journal Referee**, *The Astrophysical Journal*.

2019.12 **Coordinator**, *Astro Colloquia*, SNS.
2021.02

2019.1 **Coordinator**, *Arxiv Daily Meeting*, SNS.
2019.12

2018.02 **Outreach Experiment and Talk**, *Antarctica Explorers with Qantas flight*, UniMelb.

2017.08 **Outreach Volunteer**, *University Open Day*, UniMelb.

2017.08 **Lab Demonstrator**, *From the Solar System to the Universe*, UniMelb.
2017.10

2017.03 **Lab Demonstrator**, 1^{st} *Year Physics Undergraduate Program - Fundamental*, UniMelb.
2017.05

2016.03 – 2016.05 **Lab Demonstrator**, *1st Year Physics Undergraduate Program - Advanced*, UniMelb.

2016.02 – 2017.03 **Coordinator**, *Astro Group Meeting*, UniMelb.

2015.11 – 2017.02 **Coordinator**, *Simulation Group Lunch Meeting*, UniMelb.

2015.08 – 2015.10 **Lab Demonstrator**, *1st Year Physics Undergraduate Program - Biomedicine*, UniMelb.

2015.03 – 2015.05 **Lab Demonstrator**, *1st Year Physics Undergraduate Program - Standard*, UniMelb.

Programming Skills

- multi-threaded high-performance computing involving big dataset on large distributed platforms; high-skilled in C and PYTHON; author/major contributor to
  - ASTRODATAPY: a collective framework of astronomical data;
  - 21cmFAST: a fast, semi-numerical simulation of the high-redshift 21-cm signal;
  - 21CMMC: a Monte Carlo Markov Chain analysis tool for the epoch of reionization;
  - MERAXES: a semi-analytic model of galaxy formation.

References

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