

## Jesse Liu

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| APPOINTMENTS             | Junior Research Fellow, Trinity College, University of Cambridge, UK<br>On leave Oct 2019 – Sep 2021<br>Grainger Postdoctoral Fellow, University of Chicago, USA   | 2019 – present<br><br>2019 – 2021  |
| EDUCATION                | DPhil Particle Physics, University of Oxford, UK<br>Two-year research stay at CERN, Switzerland<br>Supervisors: Alan Barr and John March-Russell<br>MSc Physics, Perimeter Institute and University of Waterloo, Canada<br>Supervisor: Natalia Toro<br>BA Physics, University of Oxford, UK  | 2015 – 2019<br><br><br>2014 – 2015<br><br>2011 – 2014  |
| AWARDS &<br>SCHOLARSHIPS | Idea Day Prize, ATLAS Collaboration<br>Junior Research Fellowship (for any academic discipline), Trinity College, Cambridge<br>Grainger Postdoctoral Fellowship (for any field of physics), University of Chicago<br>Best Poster (1st out of 226 entries), International Conference on High Energy Physics<br>Travel Grant, International Conference on High Energy Physics<br>Santander Academic Travel Award, University of Oxford<br>Postgraduate Studentship, PhD scholarship from STFC<br>PSI Award, MSc scholarship from Perimeter Institute and University of Waterloo<br>Fitzgerald Prize, Exeter College, Oxford<br>Summer Research Studentship, Oxford Particle Physics<br>Gibbs Prize, winner of Oxford physics speaking competition<br>East Scholarship, Exeter College, Oxford<br>Fitzgerald Prize, Exeter College, Oxford<br>Essay Prize, winner of Institute of Physics essay competition | 2021<br>2019<br>2019<br>2018<br>2018<br>2018<br>2015<br>2014<br>2014<br>2013<br>2013<br>2012<br>2012<br>2012 |
| PAPERS                   | All papers available at INSPIREHEP. ATLAS author since 2017. Particle physics convention lists authors alphabetically. Selected papers with direct personal contributions:   |  |
|                          | 11. <b>J. Liu</b> , K. Dona, G. Hoshino, S. Knirck, N. Kurinsky, M. Malaker, D. W. Miller, A. Sonnenschein, M. H. Awida, P. Barry, K. Berggren, D. Bowring, G. Carosi, C. Chang, A. Chou, R. Khatiwada, S. Lewis, J. Li, S. W. Nam, O. Noroozian, T. X. Zhou, ‘Broadband solenoidal halo-scope for terahertz axion detection’, <i>Phys. Rev. Lett.</i> <b>128</b> (2022) 131801, arXiv:2111.12103  |  |
|                          | 10. K. Dona, <b>J. Liu</b> , N. Kurinsky, D. Miller, P. Barry, C. Chang, A. Sonnenschein, ‘Design and performance of a multi-terahertz Fourier transform spectrometer for axion dark matter experiments’, arXiv:2104.07157   |  |
|                          | 9. ATLAS Collaboration ( <b>J. Liu</b> Editor & Lead Analyzer), ‘Observation and Measurement of Forward Proton Scattering in Association with Lepton Pairs Produced via the Photon Fusion Mechanism at ATLAS’, <i>Phys. Rev. Lett.</i> <b>125</b> (2020) 261801, arXiv:2009.14537  |  |
|                          | 8. J. Amacker, W. Balunas, L. Beresford, D. Bortoletto, J. Frost, C. Issever, <b>J. Liu</b> , J. McKee, A. Micheli, S. Paredes Saenz, M. Spannowsky, B. Stanislaus, ‘Higgs self-coupling measurements using deep learning in the $b\bar{b}b\bar{b}$ final state’, <i>JHEP</i> <b>12</b> (2020) 115, arXiv:2004.04240   |  |

7. ATLAS Collaboration, ‘Searches for electroweak production of supersymmetric particles with compressed mass spectra in  $\sqrt{s} = 13$  TeV  $pp$  collisions with the ATLAS detector’, Phys. Rev. D **101** (2020) 052005, arXiv:1911.12606
6. L. Beresford and **J. Liu**, ‘New physics and tau  $g - 2$  using LHC heavy ion collisions’, Phys. Rev. D **102** (2020) 113008, arXiv:1908.05180
5. I. Dawson, B. Gallop, **J. Liu**, P. Miyagawa, P. Phillips, G. Pownall, D. Robinson and A. Weidberg, ‘In situ radiation damage studies of optoelectronics in the ATLAS SemiConductor Tracker’, JINST **14** (2019) P07014
4. L. Beresford and **J. Liu**, ‘Search Strategy for Sleptons and Dark Matter Using the LHC as a Photon Collider’, Phys. Rev. Lett. **123** (2019) 141801, arXiv:1811.06465
3. ATLAS Collaboration (**J. Liu** Editor & Lead Analyzer), ‘Search for electroweak production of supersymmetric states in scenarios with compressed mass spectra at  $\sqrt{s} = 13$  TeV with the ATLAS detector’, Phys. Rev. D **97** (2018) 052010, arXiv:1712.08119
2. A. Barr and **J. Liu**, ‘Analysing parameter space correlations of recent 13 TeV gluino and squark searches in the pMSSM’, Eur. Phys. J. C **77** (2017) 202, arXiv:1608.05379
1. A. Barr and **J. Liu**, ‘First interpretation of 13 TeV supersymmetry searches in the pMSSM’, arXiv:1605.09502, Published with 1608.05379 in Eur. Phys. J. C **77** (2017) 202

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| INVITED<br>SEMINARS               | Cornell University, LEPP Journal Club Seminar, USA (Scheduled)        | 6 May 2022  |
|                                   | Perimeter Institute, Particle Physics Seminar, Canada (Scheduled)     | 3 May 2022  |
|                                   | Case Western Reserve University, Particle/Astro Seminar, USA (Online) | 1 Mar 2022  |
|                                   | University of Cambridge, Cavendish HEP Seminar, UK                    | 30 Nov 2021 |
|                                   | University of Tennessee Knoxville, HEP Seminar, USA (Online)          | 8 Sep 2021  |
|                                   | Cornell University, LEPP Journal Club Seminar, USA (Online)           | 30 Oct 2020 |
|                                   | Stony Brook University, Particle Physics Seminar, USA (Online)        | 19 Oct 2020 |
|                                   | University of Pittsburgh, PITT PACC Seminar, USA (Online)             | 5 Aug 2020  |
|                                   | SLAC Stanford University, Particle Physics Theory Seminar, USA        | 12 Feb 2020 |
|                                   | Fermilab, Cosmic Physics Center Chalk Talk, USA                       | 14 Nov 2019 |
|                                   | Fermilab, LPC Physics Forum, USA                                      | 31 Oct 2019 |
|                                   | University of Cambridge, Cavendish HEP Seminar, UK                    | 19 Feb 2019 |
|                                   | LBNL University of California Berkeley, RPM Seminar, USA              | 20 Nov 2018 |
|                                   | SLAC Stanford University, Joint Theory–Experiment Seminar, USA        | 20 Apr 2018 |
|                                   | Perimeter Institute for Theoretical Physics, BSM Seminar, Canada      | 17 Apr 2018 |
|                                   | University of California Santa Cruz, SCIPP Seminar, USA               | 10 Apr 2018 |
|                                   | University of Oxford, Dalitz Seminar, UK                              | 19 Jan 2017 |
|                                   | University of Cambridge, Joint DAMTP–Cavendish Seminar, UK            | 13 Jan 2017 |
| CONFERENCE<br>& WORKSHOP<br>TALKS | Institute of Physics Joint APP HEPP Conference, Harwell, UK           | 5 Apr 2022  |
|                                   | Snowmass Cosmic Frontier CF2 Wavelike DM Meeting (Online)             | 8 Oct 2021  |
|                                   | APS DPF Meeting, Florida State, USA (Online)                          | 14 Jul 2021 |
|                                   | Phenomenology Symposium, Pittsburgh, USA (Online)                     | 25 May 2021 |
|                                   | American Physical Society April Meeting (Online)                      | 20 Apr 2021 |
|                                   | DIS Conference, Stony Brook, USA (Online)                             | 14 Apr 2021 |
|                                   | LHC Forward Physics Meeting (Online)                                  | 4 Mar 2021  |
|                                   | Forward Physics and QCD with LHC, EIC and Cosmic Rays (Online)        | 23 Jan 2021 |
|                                   | Snowmass Energy Frontier EF09 BSM Meeting (Online)                    | 4 Sep 2020  |
|                                   | ICHEP Conference, Prague, Czech Republic (Online)                     | 30 Jul 2020 |

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|                            | Snowmass Energy Frontier Joint Preparatory Session (Online) | 8 Jul 2020  |
|                            | Higgs Couplings Conference, Oxford, UK                      | 2 Oct 2019  |
|                            | Young Experimentalists & Theorists Institute, Durham, UK    | 8 Jan 2019  |
|                            | LHC Forward Physics Workshop, CERN, Switzerland             | 18 Dec 2018 |
|                            | Oxford–Durham Di-Higgs Workshop, Durham, UK                 | 6 Nov 2018  |
|                            | SUSY Conference, Barcelona, Spain                           | 23 Jul 2018 |
|                            | ICHEP Conference, Seoul, South Korea                        | 6 Jul 2018  |
|                            | DM@LHC Workshop, Heidelberg, Germany                        | 5 Apr 2018  |
|                            | Institute of Physics Joint APP HEPP Conference, Bristol, UK | 27 Mar 2018 |
|                            | Young Theorists Forum, Durham, UK                           | 10 Jan 2018 |
|                            | Young Theorists Forum, Durham, UK                           | 11 Jan 2017 |
|                            | 2nd LHC BSM Reinterpretation Workshop, CERN, Switzerland    | 14 Dec 2016 |
|                            | Theoretical Particle Physics Summer School, Manchester, UK  | 31 Aug 2016 |
|                            | 1st LHC BSM Reinterpretation Workshop, CERN, Switzerland    | 17 Jun 2016 |
| COLLABORATION<br>PLENARIES | ATLAS Upgrade Physics (Online)                              | 22 Apr 2021 |
|                            | ATLAS SM Plenary (Online)                                   | 15 Apr 2021 |
|                            | ATLAS Run 4 Roman Pot Meeting (Online)                      | 26 Mar 2021 |
|                            | ATLAS Idea Day (Online)                                     | 20 Jan 2021 |
|                            | ATLAS Roman Pot General Meeting (Online)                    | 7 Oct 2020  |
|                            | ATLAS SM Jamboree (Online)                                  | 30 Sep 2020 |
|                            | ATLAS SM Plenary Analysis Closure (Online)                  | 2 Jul 2020  |
|                            | ATLAS Week Plenary on SM & AFP (Online)                     | 24 Jun 2020 |
|                            | ATLAS Roman Pot General Meeting, CERN, Switzerland          | 23 Jan 2020 |
|                            | ATLAS Hadronic Final State Forum, Chicago, USA              | 20 Dec 2019 |
|                            | ATLAS UK SUSY–Exotics Meeting, Cambridge, UK                | 11 Apr 2019 |
|                            | ATLAS SUSY Run 3 Ideas, CERN, Switzerland                   | 22 Nov 2018 |
|                            | ATLAS SUSY Plenary, CERN, Switzerland                       | 19 Jul 2018 |
|                            | ATLAS Exotics Workshop, Rome, Italy (poster)                | 29 May 2018 |
|                            | ATLAS Week Plenary on SUSY, CERN, Switzerland               | 21 Feb 2018 |
|                            | ATLAS Analysis Open Presentation, CERN, Switzerland         | 1 Nov 2017  |
|                            | ATLAS Exotics–SUSY Workshop, Bucharest, Romania             | 12 May 2017 |
|                            | ATLAS SUSY Electroweak, CERN, Switzerland                   | 10 Feb 2017 |
|                            | ATLAS UK Meeting, Liverpool, UK                             | 5 Jan 2017  |
|                            | ATLAS Week Plenary on SCT/ID Gen, CERN, Switzerland         | 17 Oct 2016 |
| MENTORING<br>& TEACHING    | Graduate student collaborators                              |             |
|                            | Kristin Dona, PhD student, UChicago                         | 2019 – 2021 |
|                            | Savannah Clawson, PhD student, Manchester                   | 2019 – 2020 |
|                            | Santiago Paredes Saenz, PhD student, Oxford                 | 2018 – 2020 |
|                            | Beojan Stanislaus, PhD student, Oxford                      | 2018 – 2020 |
|                            | Gabriel Gallardo, PhD student, Oxford                       | 2018 – 2019 |
|                            | Gavin Pownall, PhD student, Oxford                          | 2018 – 2019 |
|                            | Undergraduate student collaborators                         |             |
|                            | Joe Ray, MPhys student, Oxford                              | 2018 – 2019 |
|                            | Dan Kreso, MPhys student, Oxford                            | 2017 – 2018 |
|                            | Alessandro Micheli, summer student, Oxford                  | 2018        |
|                            | Ewan McCullough, summer student, Oxford                     | 2017        |
|                            | Charles Sillett, summer student, Oxford/CERN                | 2017        |

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|                        | Trinity College Postdoc-PhD Mentoring Programme                                 | 2022             |
|                        | Lecturer, Oxford undergraduate summer students: ‘The Standard Model’            | Jul 2018         |
|                        | Tutor, Oxford 3rd year undergraduates: ‘Flows, Fluctuations & Complexity’       | May 2016         |
|                        | Tutor, Oxford 3rd year undergraduates: ‘Subatomic Physics’                      | May 2016         |
| SERVICE &<br>COMMUNITY | Contributing author, Snowmass whitepaper ‘Axion Dark Matter’, 2203.14923        | 2022             |
|                        | Convener of ATLAS Standard Model Soft QCD physics group                         | From Apr 2022    |
|                        | Inner Tracker strips upgrade module pre-production, Cambridge ATLAS             | 2021 – present   |
|                        | Chair of Editorial Board, ATLAS Heavy Ions                                      | 2022             |
|                        | Member of Editorial Board, ATLAS Standard Model                                 | 2021             |
|                        | Referee for Nuclear Physics B   | 2021             |
|                        | Contact for Run 4 AFP physics studies   | 2021             |
|                        | Institute reading coordination (Trigger), UChicago ATLAS group                  | Sep 2020         |
|                        | Coordinator for Snowmass Letter of Interest on terahertz axions                 | Aug 2020         |
|                        | Grainger Fellowship website development, UChicago Physics                       | Jul 2020         |
|                        | Postdoctoral community working group, UChicago KICP                             | Jul 2020         |
|                        | Journal club, UChicago ATLAS group  | May 2020         |
|                        | Institute reading coordination (Trigger), UChicago ATLAS group                  | Dec 2019         |
|                        | Graduate open day speaker & poster, Oxford Particle Physics                     | Dec 2018         |
|                        | Institute paper reading (Supersymmetry), Oxford ATLAS group                     | Jul 2018         |
|                        | Organising committee member, YETI 2017, Durham University                       | Sep 2016         |
|                        | Physics aptitude test marker, Oxford undergraduate admissions                   | Nov 2015         |
|                        | Resident advisor for US visiting students, Williams-Exeter Programme at Oxford  | 2012 – 2014      |
|                        | Publicity officer, Oxford Undergraduate Physics Conference                      | Mar 2013         |
| OUTREACH               | Trinity College Science Society Symposium, ‘Dark matter and colossal colliders’ | 13 Mar 2022      |
|                        | CERN Courier magazine article, ‘The LHC as a photon collider’                   | 15 Aug 2020      |
|                        | ATLAS Physics Briefing, online news article on AFP result                       | 30 Jul 2020      |
|                        | Trinity Forum, Cambridge, ‘Dark matter at the LHC’ invited talk                 | 5 Jun 2019       |
|                        | Pint of Science, Manchester, ‘Using light to reveal the darkness’ invited talk  | 20 May 2019      |
|                        | Oxford HiggsHunters, mentoring secondary school students                        | 26 – 27 Jun 2018 |
|                        | CERN school visit, hosting 35 sixth form students, teacher engagement           | 15 Feb 2018      |
|                        | FQXi essay, information in physics and biology                                  | 3 Mar 2017       |
|                        | Lunch with CERN scientists, physics discussions with school students            | 21 Oct 2016      |
|                        | Oxfordshire Science Festival, all-day live physics demos on Broad Street        | 26 Jun 2016      |
|                        | Perimeter Institute PSI Blog, ‘Surprises of spin’                               | 15 May 2016      |
|                        | Out of this World: Family Fun Day, targeting under-represented at university    | 17 Apr 2016      |
|                        | Oxford Catz Exchange, ‘Seeing the unseeable’ talk                               | 25 Feb 2016      |
|                        | Oxford FameLab, ‘Listening to numbers’ talk                                     | 25 Jan 2016      |
|                        | Oxford Stargazing Live, all-day live demos at particle physics stall            | 16 Jan 2016      |
|                        | Oxford Science Christmas Lectures, mentoring school students                    | 8 Dec 2015       |
|                        | Oxford Flash Talk Physics, ‘Fiddling with physics’ invited talk                 | 4 Dec 2013       |
|                        | Institute of Physics essay, ‘Predicting the unpredictable’                      | 30 May 2012      |