





Andrew Fowlie

Associate Prof. in high-energy physics

Specialize in computational methods and statistical analysis of experimental data. Over 60 papers with over 2000 citations, including first-author papers in the most prestigious and best-ranked journals. Delivered over 50 seminars and presentations.

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Areas of specialization

- International reputation in high-energy physics for innovative Bayesian statistical analyses, including parameter fitting, model selection and software
- Beyond the Standard Model physics, including dark matter, supersymmetry, Higgs and collider phenomenology
- Fine-tuning, naturalness and the hierarchy problem

Experience

- 2025 – Associate Professor, School of Maths and Physics, XJTLU, Suzhou, China
- 2023 – 2024 Assistant Professor, School of Maths and Physics, XJTLU, Suzhou, China
- 2018 – 2022 Associate Professor, Department of Physics, Nanjing Normal University, Nanjing, China
- 2015 – 2018 Post-doctoral researcher, Department of Physics, Monash University, Melbourne, Australia
Particle phenomenology with a focus on Bayesian statistics with [Prof. Csaba Balázs](#)
- 2014 – 2015 Post-doctoral researcher, [KBFI \(National Institute of Chemical Physics and Biophysics\)](#), Estonia
Particle phenomenology under [Prof. Martti Raidal](#)
- 2009 – 2013 Ph.D., University of Sheffield, UK
[Bayesian Approach to Investigating Supersymmetric Models](#) supervised by [Prof. Leszek Roszkowski](#)

Research

GRANTS

- 2024
- **560 000 RMB [PI; NSFC]** + **180 000 RMB [PI; internal]** – NSFC RFIS-II (W2432006), *Percolation of first-order cosmological phase transitions in the early Universe*, **FOWLIE, A.** (PI), 1 January 2025 – 31 December 2026
 - **180 000 RMB [PI; internal]** – Post-graduate Research Scholarship (PGRS FOSA2406017), *Bayes factor surface for searches for new physics*, **FOWLIE, A.** (PI)
- 2023
- **100 000 RMB [PI; internal]** – Research Development Fund (RDF-22-02-079), *Exact-Approximate methods for searches for new physics at the Large Hadron Collider*, **FOWLIE, A.** (PI), 1 July 2023 – 30 June 2025
 - **550 000 RMB [CI; NSFC]** – NSFC General Program (12275134), 暗物质粒子及其相关的新物理唯象学研究, [Wu, L.](#) (PI), Fowlie, A. (CI), et al, 1 January 2023 – 31 December 2026
- 2020
- **\$449 659 AUD [CI; ARC]** – Australian Research Council Discovery Project ([DP210101636](#)), *Electroweak phase transition: A cosmological window to new particle physics*, [Kobakhidze, A.](#) (Primary

Chief Investigator), Balázs, C. (Chief Investigator), Ramsey-Musolf, M.J. (Partner Investigator), FOWLIE, A. (Partner Investigator), 13 December 2021 – 12 December 2024

- 2019 ■ **350 000 RMB [PI; NSFC]** — NSFC RFIS-I (11950410509), *Discovering dark matter with Bayesian and frequentist statistics*, FOWLIE, A. (PI), 1 January 2020 – 31 December 2021

PUBLICATIONS

- *h*-index of 27, over 2,300 citations, and over 50 publications
- Published as first or corresponding author in *Nature Comm.* [97%; Q1; CS: 24.9], *Nature Reviews Methods Primers* [98%; Q1; CS: 46.1], *Rept. Prog. Phys.* [98%; Q1; CS: 31.9] and twice in *Phys. Rev. Lett.* [94%; Q1; CS: 16.5]; published in *Prog. Part. Nucl. Phys.* [99%; Q1; CS: 24.5]
- Six papers with over 100 citations & ten papers with over 50 citations
- Journal bibliometrics — percentile, quartile and Cite Score (CS) — from Scopus & corresponding author publications marked by star (the author lists in my fields are alphabetical)
- See <http://inspirehep.net/author/profile/A.Fowlie.1>

- 2025 [1] Antusch, S. *et al.* New Physics Search at the CEPC: a General Perspective. Accepted at *Chin. Phys. C* (2025). [[arXiv:2505.24810](#)], **6 cites**
- ★ Q1 [2] FOWLIE, A. PolyStan: PolyChord nested sampling and Bayesian evidences for Stan models. Under review at *J. Stat. Softw.* [98%; Q1; CS: 12.3] (2025). [[arXiv:2505.17620](#)]
- ★ Q1 [3] FOWLIE, A. stanhf: HistFactory models in the probabilistic programming language Stan. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 85, 923, DOI: [10.1140/epjc/s10052-025-14495-1](#) (2025). [[arXiv:2503.22188](#)], **1 cite**
- ★ Q1 [4] Chang, C., Farmer, B., FOWLIE, A. & Kvellestad, A. Bring the noise: exact inference from noisy simulations in collider physics. Under review at *Phys. Rev. D* [91%; Q1; CS: 8.3] (2025). [[arXiv:2502.08157](#)]
- Q1 [5] Athron, P., Balazs, C., FOWLIE, A., Morris, L., Searle, W., Xiao, Y. & Zhang, Y. PhaseTracer2: from the effective potential to gravitational waves. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] (2024). [[arXiv:2412.04881](#)], **10 cites**
- 2024 Q1 [6] Albert, J., Balazs, C., FOWLIE, A., Handley, W., Hunt-Smith, N., de Austri, R. R. & White, M. A comparison of Bayesian sampling algorithms for high-dimensional particle physics and cosmology applications. *Comput. Phys. Commun.* [93%; Q1; CS: 12.1] 315, 109756, DOI: [10.1016/j.cpc.2025.109756](#) (2025). [[arXiv:2409.18464](#)], **7 cites**
- ★ Q1 [7] FOWLIE, A. & Herrera, G. Precise interpretations of traditional fine-tuning measures. *Phys. Rev. D* [91%; Q1; CS: 8.3] 111, 015020, DOI: [10.1103/PhysRevD.111.015020](#) (2025). [[arXiv:2406.03533](#)]
- ★ Q1 [8] FOWLIE, A. The Bayes factor surface for searches for new physics. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 84, 426, DOI: [10.1140/epjc/s10052-024-12792-9](#) (2024). [[arXiv:2401.11710](#)], **8 cites**
- 2023 Q3 [9] Abdallah, W. *et al.* CEPC Technical Design Report: Accelerator. *Radiat. Detect. Technol. Methods* [42%; Q3; CS: 1.5] 8, 1–1105, DOI: [10.1007/s41605-024-00463-y](#) (2024). [[arXiv:2312.14363](#)], **156 cites** **TOPCITE 100+**
- ★ Q1 [10] Athron, P., FOWLIE, A., Lu, C.-T., Morris, L., Wu, L., Wu, Y. & Xu, Z. Can Supercooled Phase Transitions Explain the Gravitational Wave Background Observed by Pulsar Timing Arrays? *Phys. Rev. Lett.* [94%; Q1; CS: 16.5] 132, 221001, DOI: [10.1103/PhysRevLett.132.221001](#) (2024). [[arXiv:](#)

- 2306.17239], 85 *cites* TOPCITE 50+
- ★ Q1 [11] FOWLIE, A. & Li, Q. Modeling the R -ratio and hadronic contributions to $g - 2$ with a Treed Gaussian process. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 83, 943, DOI: [10.1140/epjc/s10052-023-12110-9](https://doi.org/10.1140/epjc/s10052-023-12110-9) (2023). [[arXiv:2306.17385](https://arxiv.org/abs/2306.17385)], 3 *cites*
- Q1 [12] Athron, P., Balázs, C., FOWLIE, A., Morris, L. & Wu, L. Cosmological phase transitions: From perturbative particle physics to gravitational waves. *Prog. Part. Nucl. Phys.* [99%; Q1; CS: 24.5] 135, 104094, DOI: [10.1016/j.pnpnp.2023.104094](https://doi.org/10.1016/j.pnpnp.2023.104094) (2024). [[arXiv:2305.02357](https://arxiv.org/abs/2305.02357)], 214 *cites* TOPCITE 100+
- Q1 [13] Ananyev, V. *et al.* Collider constraints on electroweakinos in the presence of a light gravitino. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 83, 493, DOI: [10.1140/epjc/s10052-023-11574-z](https://doi.org/10.1140/epjc/s10052-023-11574-z) (2023). [[arXiv:2303.09082](https://arxiv.org/abs/2303.09082)], 23 *cites*
- ★ Q1 [14] FOWLIE, A. Origins of Parameters in Adimensional Models. *Int. J. Theor. Phys.* [80%; Q1; CS: 2.5] 62, 198, DOI: [10.1007/s10773-023-05456-z](https://doi.org/10.1007/s10773-023-05456-z) (2023). [[arXiv:2302.04076](https://arxiv.org/abs/2302.04076)]
- 2022 Q1 [15] Athron, P., Balázs, C., FOWLIE, A., Morris, L., White, G. & Zhang, Y. How arbitrary are perturbative calculations of the electroweak phase transition? *JHEP* [94%; Q1; CS: 10] 01, 050, DOI: [10.1007/JHEP01\(2023\)050](https://doi.org/10.1007/JHEP01(2023)050) (2023). [[arXiv:2208.01319](https://arxiv.org/abs/2208.01319)], 48 *cites*
- ★ Q1 [16] Ashton, G. *et al.* Nested sampling for physical scientists. *Nature Reviews Methods Primers* [98%; Q1; CS: 46.1] 2, DOI: [10.1038/s43586-022-00121-x](https://doi.org/10.1038/s43586-022-00121-x) (2022). [[arXiv:2205.15570](https://arxiv.org/abs/2205.15570)], 8 188 *cites* TOPCITE 100+
- ★ Q1 [17] Athron, P., FOWLIE, A., Lu, C.-T., Wu, L., Wu, Y. & Zhu, B. Hadronic uncertainties versus new physics for the W boson mass and Muon $g - 2$ anomalies. *Nature Commun.* [97%; Q1; CS: 24.9] 14, 659, DOI: [10.1038/s41467-023-36366-7](https://doi.org/10.1038/s41467-023-36366-7) (2023). [[arXiv:2204.03996](https://arxiv.org/abs/2204.03996)], 112 *cites* TOPCITE 100+
- Q1 [18] Athron, P., Balázs, C., FOWLIE, A., Lv, H., Su, W., Wu, L., Yang, J. M. & Zhang, Y. Global fits of SUSY at future Higgs factories. *Phys. Rev. D* [91%; Q1; CS: 8.3] 105, 115029, DOI: [10.1103/PhysRevD.105.115029](https://doi.org/10.1103/PhysRevD.105.115029) (2022). [[arXiv:2203.04828](https://arxiv.org/abs/2203.04828)], 7 *cites*
- 2021 ★ Q2 [19] FOWLIE, A. Neyman-Pearson lemma for Bayes factors. *Commun. In Stat. — Theory Method* [51%; Q2; CS: 2.0] 1–8, DOI: [10.1080/03610926.2021.2007265](https://doi.org/10.1080/03610926.2021.2007265) (2021). [[arXiv:2110.15625](https://arxiv.org/abs/2110.15625)], 8 6 *cites*
- ★ Q1 [20] FOWLIE, A. Comment on “Accumulating evidence for the associate production of a neutral scalar with mass around 151 GeV”. *Phys. Lett. B* [92%; Q1; CS: 9.1] 827, 136936, DOI: [10.1016/j.physletb.2022.136936](https://doi.org/10.1016/j.physletb.2022.136936) (2022). [[arXiv:2109.13426](https://arxiv.org/abs/2109.13426)], 7 *cites*
- Q1 [21] Cranmer, K. *et al.* Publishing statistical models: Getting the most out of particle physics experiments. *SciPost Phys.* [87%; Q1; CS: 8.2] 12, 037, DOI: [10.21468/SciPostPhys.12.1.037](https://doi.org/10.21468/SciPostPhys.12.1.037) (2022). [[arXiv:2109.04981](https://arxiv.org/abs/2109.04981)], 49 *cites*
- Q1 [22] Athron, P. *et al.* Thermal WIMPs and the scale of new physics: global fits of Dirac dark matter effective field theories. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 81, 992, DOI: [10.1140/epjc/s10052-021-09712-6](https://doi.org/10.1140/epjc/s10052-021-09712-6) (2021). [[arXiv:2106.02056](https://arxiv.org/abs/2106.02056)], 44 *cites*
- ★ Q1 [23] FOWLIE, A., Hoof, S. & Handley, W. Nested Sampling for Frequentist Computation: Fast Estimation of Small p-Values. *Phys. Rev. Lett.* [94%; Q1; CS: 16.5] 128, 021801, DOI: [10.1103/PhysRevLett.128.021801](https://doi.org/10.1103/PhysRevLett.128.021801) (2022). [[arXiv:2105.13923](https://arxiv.org/abs/2105.13923)], 7 *cites*
- ★ [24] FOWLIE, A. Comment on “Reproducibility and Replication of Experimental Particle Physics

- Results". *Harvard Data Science Review* DOI: [10.1162/99608f92.b9bfc518](https://doi.org/10.1162/99608f92.b9bfc518) (2021). [[arXiv:2105.03082](https://arxiv.org/abs/2105.03082)], **3 cites**
- ★ **Q1** [25] Balázs, C. *et al.* A comparison of optimisation algorithms for high-dimensional particle and astrophysics applications. *JHEP* [[94%](#); **Q1**; **CS: 10**] **05**, 108, DOI: [10.1007/JHEP05\(2021\)108](https://doi.org/10.1007/JHEP05(2021)108) (2021). [[arXiv:2101.04525](https://arxiv.org/abs/2101.04525)], **27 cites**
- 2020 ★ **Q2** [26] FOWLIE, A. Objective Bayesian approach to the Jeffreys-Lindley paradox. *Commun. In Stat. — Theory Method* [[51%](#); **Q2**; **CS: 2.0**] **1–6**, DOI: [10.1080/03610926.2020.1866206](https://doi.org/10.1080/03610926.2020.1866206) (2020). [[arXiv:2012.04879](https://arxiv.org/abs/2012.04879)], **8** **1 cite**
- ★ **Q1** [27] AbdusSalam, S. S. *et al.* Simple and statistically sound recommendations for analysing physical theories. *Rept. Prog. Phys.* [[98%](#); **Q1**; **CS: 31.9**] **85**, 052201, DOI: [10.1088/1361-6633/ac60ac](https://doi.org/10.1088/1361-6633/ac60ac) (2022). [[arXiv:2012.09874](https://arxiv.org/abs/2012.09874)], **28 cites**
- ★ **Q1** [28] FOWLIE, A., Handley, W. & Su, L. Nested sampling with plateaus. *Mon. Not. Roy. Astron. Soc.* [[87%](#); **Q1**; **CS: 9.1**] **503**, 1199–1205, DOI: [10.1093/mnras/stab590](https://doi.org/10.1093/mnras/stab590) (2021). [[arXiv:2010.13884](https://arxiv.org/abs/2010.13884)], **10 cites**
- ★ **Q1** [29] Athron, P. *et al.* Global fits of axion-like particles to XENON1T and astrophysical data. *JHEP* [[94%](#); **Q1**; **CS: 10**] **05**, 159, DOI: [10.1007/JHEP05\(2021\)159](https://doi.org/10.1007/JHEP05(2021)159) (2021). [[arXiv:2007.05517](https://arxiv.org/abs/2007.05517)], **64 cites**
TOPCITE 50+
- ★ **Q1** [30] FOWLIE, A., Handley, W. & Su, L. Nested sampling cross-checks using order statistics. *Mon. Not. Roy. Astron. Soc.* [[87%](#); **Q1**; **CS: 9.1**] **497**, 5256–5263, DOI: [10.1093/mnras/staa2345](https://doi.org/10.1093/mnras/staa2345) (2020). [[arXiv:2006.03371](https://arxiv.org/abs/2006.03371)], **21 cites**
- ★ **Q1** [31] Athron, P., Balázs, C., FOWLIE, A. & Zhang, Y. PhaseTracer: tracing cosmological phases and calculating transition properties. *Eur. Phys. J. C* [[91%](#); **Q1**; **CS: 8.1**] **80**, 567, DOI: [10.1140/epjc/s10052-020-8035-2](https://doi.org/10.1140/epjc/s10052-020-8035-2) (2020). [[arXiv:2003.02859](https://arxiv.org/abs/2003.02859)], **39 cites**
- 2019 **Q1** [32] Athron, P., Balázs, C., FOWLIE, A., Pozzo, G., White, G. & Zhang, Y. Strong first-order phase transitions in the NMSSM — a comprehensive survey. *JHEP* [[94%](#); **Q1**; **CS: 10**] **11**, 151, DOI: [10.1007/JHEP11\(2019\)151](https://doi.org/10.1007/JHEP11(2019)151) (2019). [[arXiv:1908.11847](https://arxiv.org/abs/1908.11847)], **50 cites** **TOPCITE 50+**
- ★ **Q2** [33] FOWLIE, A. Bayesian and frequentist approaches to resonance searches. *JINST* [[59%](#); **Q2**; **CS: 2.4**] **14**, P10031, DOI: [10.1088/1748-0221/14/10/P10031](https://doi.org/10.1088/1748-0221/14/10/P10031) (2019). [[arXiv:1902.03243](https://arxiv.org/abs/1902.03243)], **8 cites**
- Q1** [34] Athron, P., Balázs, C., Bardsley, M., FOWLIE, A., Harries, D. & White, G. BubbleProfiler: finding the field profile and action for cosmological phase transitions. *Comput. Phys. Commun.* [[93%](#); **Q1**; **CS: 12.1**] **244**, 448–468, DOI: [10.1016/j.cpc.2019.05.017](https://doi.org/10.1016/j.cpc.2019.05.017) (2019). [[arXiv:1901.03714](https://arxiv.org/abs/1901.03714)], **68 cites**
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- 2018 ★ **Q1** [35] FOWLIE, A. Non-parametric uncertainties in the dark matter velocity distribution. *JCAP* [[88%](#); **Q1**; **CS: 10.2**] **01**, 006, DOI: [10.1088/1475-7516/2019/01/006](https://doi.org/10.1088/1475-7516/2019/01/006) (2019). [[arXiv:1809.02323](https://arxiv.org/abs/1809.02323)], **11 cites**
- Q1** [36] Athron, P. *et al.* Combined collider constraints on neutralinos and charginos. *Eur. Phys. J. C* [[91%](#); **Q1**; **CS: 8.1**] **79**, 395, DOI: [10.1140/epjc/s10052-019-6837-x](https://doi.org/10.1140/epjc/s10052-019-6837-x) (2019). [[arXiv:1809.02097](https://arxiv.org/abs/1809.02097)], **107 cites** **TOPCITE 100+**
- Q1** [37] Athron, P. *et al.* Global analyses of Higgs portal singlet dark matter models using GAMBIT. *Eur. Phys. J. C* [[91%](#); **Q1**; **CS: 8.1**] **79**, 38, DOI: [10.1140/epjc/s10052-018-6513-6](https://doi.org/10.1140/epjc/s10052-018-6513-6) (2019). [[arXiv:1808.10465](https://arxiv.org/abs/1808.10465)], **141 cites** **TOPCITE 100+**

- ★ Q1 [38] FOWLIE, A. A fast C++ implementation of thermal functions. *Comput. Phys. Commun.* [93%; Q1; CS: 12.1] 228, 264–272, DOI: [10.1016/j.cpc.2018.02.015](https://doi.org/10.1016/j.cpc.2018.02.015) (2018). [arXiv:1802.02720], 16 cites
- 2017 ★ Q1 [39] FOWLIE, A. DAMPE squib? Significance of the 1.4 TeV DAMPE excess. *Phys. Lett. B* [92%; Q1; CS: 9.1] 780, 181–184, DOI: [10.1016/j.physletb.2018.03.006](https://doi.org/10.1016/j.physletb.2018.03.006) (2018). [arXiv:1712.05089], 33 cites
- Q1 [40] Athron, P., Balázs, C., FOWLIE, A. & Zhang, Y. Model-independent analysis of the DAMPE excess. *JHEP* [94%; Q1; CS: 10] 02, 121, DOI: [10.1007/JHEP02\(2018\)121](https://doi.org/10.1007/JHEP02(2018)121) (2018). [arXiv:1711.11376], 56 cites TOPCITE 50+
- ★ Q1 [41] Ellis, J., FOWLIE, A., Marzola, L. & Raidal, M. Statistical Analyses of Higgs- and Z-Portal Dark Matter Models. *Phys. Rev. D* [91%; Q1; CS: 8.3] 97, 115014, DOI: [10.1103/PhysRevD.97.115014](https://doi.org/10.1103/PhysRevD.97.115014) (2018). [arXiv:1711.09912], 49 cites
- Q1 [42] Athron, P., Balázs, C., Farmer, B., FOWLIE, A., Harries, D. & Kim, D. Bayesian analysis and naturalness of (Next-to-)Minimal Supersymmetric Models. *JHEP* [94%; Q1; CS: 10] 10, 160, DOI: [10.1007/JHEP10\(2017\)160](https://doi.org/10.1007/JHEP10(2017)160) (2017). [arXiv:1709.07895], 22 cites
- ★ Q1 [43] FOWLIE, A. Halo-independence with quantified maximum entropy at DAMA/LIBRA. *JCAP* [88%; Q1; CS: 10.2] 10, 002, DOI: [10.1088/1475-7516/2017/10/002](https://doi.org/10.1088/1475-7516/2017/10/002) (2017). [arXiv:1708.00181], 13 cites
- Q1 [44] Di Chiara, S., FOWLIE, A., Fraser, S., Marzo, C., Marzola, L., Raidal, M. & Spethmann, C. Minimal flavor-changing Z' models and muon $g - 2$ after the R_{K^*} measurement. *Nucl. Phys. B* [76%; Q1; CS: 5.5] 923, 245–257, DOI: [10.1016/j.nuclphysb.2017.08.003](https://doi.org/10.1016/j.nuclphysb.2017.08.003) (2017). [arXiv:1704.06200], 70 cites TOPCITE 50+
- 2016 Q1 [45] Balázs, C., FOWLIE, A., Mazumdar, A. & White, G. Gravitational waves at aLIGO and vacuum stability with a scalar singlet extension of the Standard Model. *Phys. Rev. D* [91%; Q1; CS: 8.3] 95, 043505, DOI: [10.1103/PhysRevD.95.043505](https://doi.org/10.1103/PhysRevD.95.043505) (2017). [arXiv:1611.01617], 59 cites TOPCITE 50+
- ★ Q1 [46] FOWLIE, A. Bayes factor of the ATLAS diphoton excess: Using Bayes factors to understand anomalies at the LHC. *Eur. Phys. J. Plus* [75%; Q1; CS: 5.4] 132, 46, DOI: [10.1140/epjp/i2017-11340-1](https://doi.org/10.1140/epjp/i2017-11340-1) (2017). [arXiv:1607.06608], 5 cites
- Q2 [47] Bianchini, L., Calpas, B., Conway, J., FOWLIE, A., Marzola, L., Veelken, C. & Perrini, L. Reconstruction of the Higgs mass in events with Higgs bosons decaying into a pair of τ leptons using matrix element techniques. *Nucl. Instrum. Meth. A* [56%; Q2; CS: 3.2] 862, 54–84, DOI: [10.1016/j.nima.2017.05.001](https://doi.org/10.1016/j.nima.2017.05.001) (2017). [arXiv:1603.05910], 46 cites
- ★ Q1 [48] FOWLIE, A. & Bardsley, M. H. Superplot: a graphical interface for plotting and analysing MultiNest output. *Eur. Phys. J. Plus* [75%; Q1; CS: 5.4] 131, 391, DOI: [10.1140/epjp/i2016-16391-0](https://doi.org/10.1140/epjp/i2016-16391-0) (2016). [arXiv:1603.00555], 36 cites
- ★ Q1 [49] FOWLIE, A., Balázs, C., White, G., Marzola, L. & Raidal, M. Naturalness of the relaxion mechanism. *JHEP* [94%; Q1; CS: 10] 08, 100, DOI: [10.1007/JHEP08\(2016\)100](https://doi.org/10.1007/JHEP08(2016)100) (2016). [arXiv:1602.03889], 28 cites
- 2015 ★ Q1 [50] FOWLIE, A. & Marzola, L. Examining a right-handed quark mixing matrix with b -tags at the LHC. *Nucl. Phys. B* [76%; Q1; CS: 5.5] 894, 588–601, DOI: [10.1016/j.nuclphysb.2015.03.025](https://doi.org/10.1016/j.nuclphysb.2015.03.025) (2015). [arXiv:1412.5587], 4 cites
- 2014 ★ Q1 [51] FOWLIE, A. & Marzola, L. Testing quark mixing in minimal left–right symmetric models with

b-tags at the LHC. *Nucl. Phys. B* [76%; Q1; CS: 5.5] 889, 36–45, DOI: [10.1016/j.nuclphysb.2014.10.009](https://doi.org/10.1016/j.nuclphysb.2014.10.009) (2014). [[arXiv:1408.6699](https://arxiv.org/abs/1408.6699)], 15 cites

★ Q1 [52] FOWLIE, A. Is the CNMSSM more credible than the CMSSM? *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 74, 3105, DOI: [10.1140/epjc/s10052-014-3105-y](https://doi.org/10.1140/epjc/s10052-014-3105-y) (2014). [[arXiv:1407.7534](https://arxiv.org/abs/1407.7534)], 21 cites

★ Q1 [53] FOWLIE, A. CMSSM, naturalness and the “fine-tuning price” of the Very Large Hadron Collider. *Phys. Rev. D* [91%; Q1; CS: 8.3] 90, 015010, DOI: [10.1103/PhysRevD.90.015010](https://doi.org/10.1103/PhysRevD.90.015010) (2014). [[arXiv:1403.3407](https://arxiv.org/abs/1403.3407)], 41 cites

★ Q1 [54] FOWLIE, A. & Raidal, M. Prospects for constrained supersymmetry at $\sqrt{s} = 33$ TeV and $\sqrt{s} = 100$ TeV proton-proton super-colliders. *Eur. Phys. J. C* [91%; Q1; CS: 8.1] 74, 2948, DOI: [10.1140/epjc/s10052-014-2948-6](https://doi.org/10.1140/epjc/s10052-014-2948-6) (2014). [[arXiv:1402.5419](https://arxiv.org/abs/1402.5419)], 32 cites

2013 Q1 [55] FOWLIE, A., Kowalska, K., Roszkowski, L., Sessolo, E. M. & Tsai, Y.-L. S. Dark matter and collider signatures of the MSSM. *Phys. Rev. D* [91%; Q1; CS: 8.3] 88, 055012, DOI: [10.1103/PhysRevD.88.055012](https://doi.org/10.1103/PhysRevD.88.055012) (2013). [[arXiv:1306.1567](https://arxiv.org/abs/1306.1567)], 93 cites TOPCITE 50+

2012 Q1 [56] FOWLIE, A., Kazana, M., Kowalska, K., Munir, S., Roszkowski, L., Sessolo, E. M., Trojanowski, S. & Tsai, Y.-L. S. The CMSSM Favoring New Territories: The Impact of New LHC Limits and a 125 GeV Higgs. *Phys. Rev. D* [91%; Q1; CS: 8.3] 86, 075010, DOI: [10.1103/PhysRevD.86.075010](https://doi.org/10.1103/PhysRevD.86.075010) (2012). [[arXiv:1206.0264](https://arxiv.org/abs/1206.0264)], 185 cites TOPCITE 100+

2011 Q1 [57] FOWLIE, A., Kalinowski, A., Kazana, M., Roszkowski, L. & Tsai, Y. L. S. Bayesian Implications of Current LHC and XENON100 Search Limits for the Constrained MSSM. *Phys. Rev. D* [91%; Q1; CS: 8.3] 85, 075012, DOI: [10.1103/PhysRevD.85.075012](https://doi.org/10.1103/PhysRevD.85.075012) (2012). [[arXiv:1111.6098](https://arxiv.org/abs/1111.6098)], 63 cites TOPCITE 50+

TALKS & SEMINARS

- See all slides at <https://andrewfowlie.github.io/talk/>
- Over 50 presentations and talks

Invited

- 2025 [1] [Are axion solutions to the CP problem fine-tuned?](#), The Fourth International Conference on Axion Physics and Experiment, 29 July
- [2] [Fitting —statistical modeling and analysis for physics](#), Lecture, Third New Physical Numerical Computing and Simulation Frontier Workshop, Xinxiang, 3 July
- 2024 [3] [A cry of distress from Nature? Fine-tuning in scientific theories](#), XJTU CHIPS Wisdom Forum, 9 October
- [4] [Cosmological phase transitions: From perturbative particle physics to gravitational waves](#), XJTU SMP Research Excellence Workshop, 29 May
- [5] [Testing fundamental theories with global fits](#), Seminar, Duke Kunshan, 10 May
- [6] [Testing fundamental theories with global fits](#), Seminar, Suzhou University, 26 April
- [7] [The Bayes factor surface for searches for new physics](#), NANOGrav New Physics Working Group, 20 February

- 2023 [8] [Origins of parameters in adimensional models](#), Seminar, Fudan University, 20 October
- [9] [From first order phase transitions to gravitational waves](#), The 2023 Shanghai Symposium on Particle Physics and Cosmology, Tsung-Dao Lee Institute, 23 September
- [10] [New physics in the garden of forking paths](#), Mini-Workshop on Anomalies at the LHC, Tsung-Dao Lee Institute, 21 September
- [11] [Opening up Nested Sampling](#), MaxEnt 2023, 6 July
- [12] [Origins of parameters in adimensional models](#), Seminar, Zhejiang University, 2 June
- [13] [Origins of parameters in adimensional models](#), Seminar, Shandong University, 24 May
- 2022 [14] [Herding cats? — Bayesian and frequentist methods and compromises](#), University of Goettingen CATs seminar, 14 May
- 2021 [15] [Nested sampling for frequentist computation: fast estimation of small \$p\$ -values](#), ATLAS statistics forum, 29 July
- [16] [Nested sampling for frequentist computation: fast estimation of small \$p\$ -values](#), Purple Mountain Observatory, 9 July
- [17] [Evidence for axion-like particles from XENON1T and astrophysical data](#), NCBJ, Warsaw, 12 January
- 2020 [18] [Nested sampling cross-checks using order statistics](#), Monash University, 21 July
- [19] [Nested sampling cross-checks using order statistics](#), Cambridge University, 15 July
- 2019 [20] [Strong first-order phase transitions in the NMSSM and methods for finding them](#), SJTU-U. Sydney Workshop on the Electroweak Phase Transition, Tsung-Dao Lee Institute, 19 December
- [21] [Bayesian and frequentist approaches to discoveries](#), PASCOS, July 2
- [22] [Bayesian and frequentist approaches to resonance searches](#), Purple Mountain Observatory, 16 April
- 2018 [23] [Statistical Analyses of Higgs- and \$Z\$ -Portal Dark Matter Models](#), Nanjing Normal University, 25 June
- [24] [Statistical Analyses of Higgs- and \$Z\$ -Portal Dark Matter Models](#), Melbourne University, 8 March
- 2017 [25] [Relative plausibility of scientific theories: WIMP dark matter](#), Fundamental Physics, Symmetry and Life, University of Sydney, 30 November
- [26] [Halo-independence with quantified maximum entropy](#), NCTS Workshop on Dark Matter, Particles and Cosmos, Taiwan, 14 October
- [27] [Halo-independence with quantified maximum entropy](#), NTU, Taiwan, 12 October
- [28] [Halo-independence with quantified maximum entropy](#), IPMU, Tokyo, 4 October

Other talks

- 2024 [29] [The status of fine-tuning arguments in the CEPC era](#), CEPC New Physics Workshop, 31 August
- 2023 [30] [Origins of parameters in adimensional models](#), Colloquium, XJTU, School of Maths and Physics, 28 September
- [31] [Origins of parameters in adimensional models](#), MaxEnt 2023, 7 July

- 2021 [32] [Nested sampling for frequentist computation: fast estimation of small \$p\$ -values](#), Computational Tools for High Energy Physics and Cosmology, 26 November
- [33] [Getting the most out of particle physics experiments](#), Workshop on Hadron Structure at High-Energy, High-Luminosity Facilities 2021, 27 October
- [34] [Pitfalls in likelihood land](#), (Re)interpreting the results of new physics searches at the LHC, 18 February
- 2020 [35] [Nested sampling cross-checks using order statistics](#), First International Symposium on the Interdisciplinary Frontiers of Gravity, Matter and Quantum Information, 28 December
- 2019 [36] [Strong first-order phase transitions in the NMSSM and methods for finding them](#), SJTU-U. Sydney Workshop on the Electroweak Phase Transition, 19 December
- [37] [Combined collider constraints on neutralinos and charginos](#), The tenth Weihai New Physics Workshop, Shandong University, 14 August
- [38] [Bayesian and frequentist approaches to resonance searches](#), Fourteenth workshop on TeV physics, Nanjing, 21 April
- [39] [Bayesian and frequentist approaches to resonance searches](#), Nanjing Normal University, 17 April
- 2018 [40] [Non-parametric uncertainties in the dark matter velocity distribution](#), Auckland University, 10 December
- [41] [Statistical Analyses of Higgs- and \$Z\$ -Portal Dark Matter Models](#), Seoul, ICHEP 2018, 6 July
- [42] [Potential applications of machine learning in particle physics](#), Machine Learning Symposium, National Centre for Synchrotron Science, 19 March
- 2017 [43] [Using Bayes factors to understand anomalies at the LHC](#), Energy Frontier in Particle Physics: LHC and Future Colliders, NTU, Taiwan, 30 September
- 2016 [44] [The Jeffreys-Lindley's Paradox](#), CompStats Meeting, Monash University, 1 November
- [45] [Bayesian approach to naturalness](#), Fine-tuning, the Multiverse and Life, Sydney, 24 November
- [46] [Naturalness of the relaxion mechanism](#), CosPA, Sydney, 29 November
- [47] [Bayesian naturalness of Next-to-Minimal and Minimal Supersymmetric Models](#), SUSY 2016, Melbourne, 5 July
- [48] [Naturalness of the relaxion mechanism](#), SUSY 2016, Melbourne, 7 July
- [49] [Naturalness of the relaxion mechanism](#), CoEPP Annual Theory Meeting, Melbourne, 16 February
- 2014 [50] [Prospects for constrained supersymmetry at \$\sqrt{s} = 33\$ TeV and \$\sqrt{s} = 100\$ TeV proton-proton super-colliders](#), Deep Inelastic Scattering, Warsaw, 29 April
- 2013 [51] [Bayesian reconstruction of SUSY parameters via the golden decay](#), Theory Meets Experiment, Warsaw, 6 October
- [52] [Status of CMSSM after LHC Run-I](#), HEP IOP, Liverpool, 9 April
- 2012 [53] [The CMSSM after 2 years of the LHC](#), Consortium for Fundamental Physics, Sheffield, 9 April
- 2011 [54] [Bayesian Implications of Current LHC Limits for the Constrained MSSM](#), Young Theorists' Forum, Durham, 13 December
- [55] [Supersymmetry and the LHC](#), Seminar, University of Sheffield, 1 October

Teaching & Supervision

PROFESSIONAL DEVELOPMENT

- 2025
- *Instructional Skills Workshop* at XJTLU, 24 hours of training

CURRICULUM DEVELOPMENT

- 2023 – 2024
- *School Curriculum Review Panel (SCR)* representative for Department of Physics

SUPERVISION

XJTLU postgraduate

- 2025 –
- Supervising MSc Data Science student, Qiao Wen
 - Supervising second-year physics Ph.D. student, Hao Yang

XJTLU undergraduate

- AY25 – 26
- Supervised five SURF summer project students — SURF-2025-0055 Interacting with PASCO Smart Cars using Python
- AY24 – 25
- Supervised two FYP students on statistical computation — MTH301-2425 Final Year Project
 - Supervised four SURF summer project students — SURF-2024-0040 Building a Galton board
- AY23 – 24
- Supervised four FYP students on topics in probability & statistics — MTH301-2324 Final Year Project — 5 (4.84)
 - Supervised four SURF summer project students — SURF-2023-0030 Building a Lorenz wheel

Other

- 2022 – 2024
- Supervised student for three-year Master's project, Qiao Li, on measuring contributions to precision observables using Gaussian processes [2306.17385]
- 2017 – 2018
- Supervised undergraduate project about the bounce equation and its connection to phase transitions and baryogenesis
- 2016 – 2018
- Supervised (10%) Ph.D. student, Giancarlo Pozzo, on baryogenesis in next-to-minimal supersymmetric models. My role included QFT tutorials
- 2015 – 2016
- Supervised undergraduate Michael Bardsley's summer project. We developed statistical software resulting in a publication [1603.00555]

TEACHING

- AY25 – 26
- Taught MTH101-2526-S1 Engineering Mathematics I — 5 credits — 70 students
- AY24 – 25
- Taught PHY001-2425-S2 Classical Physics for Engineers — 2.5 credits — 115 students — 4.90 (4.91)
 - Taught MTH101-2425-S1 Engineering Mathematics I — 5 credits — 196 students — 4.38 (4.43)
- AY23 – 24
- Taught PHY002-2324-S2 Physics — 5 credits — 217 students — 4.57 (4.51)
 - Taught MTH101-2324-S1 Engineering Mathematics I — 5 credits — 140 students — 3.77 (4.36)
- AY22 – 23
- Taught PHY002-2223-S2 Physics — 5 credits — 123 students — 4.42 (4.43)
- 2022 – 2023
- Led statistics and machine learning study group for about 10 talented undergraduates

- 2019 – 2022 ■ Post-graduate course on physics beyond the Standard Model — about 20 students and about 25 hours
- 2015 ■ Lectures on statistics for physicists at the University of Tartu — six hours and about 5 students
- 2012 – 2013 ■ First-year physics tutor, weekly tutorials — about 20 sessions with about 10 students
- 2010 – 2012 ■ Undergraduate physics weekly problem class assistant — about 30 students

Service

MEDIA

Articles in international news outlets, blogs and our University Marketing and Communications (UMC).

Coauthored [article](#) about *Phys. Rev. Lett.* that was syndicated in 212 non-Chinese media outlets in 7 languages with a total of about 700 000 unique readers per month. The media exposure for this alone corresponds to an advertising value equivalency of about **\$1.4 million USD**. For more details see the [UMC 30 day media report](#).

Selected internal news articles

- [Dr. Andrew Fowlie joins NANOGrav](#)
- [Dr. Andrew Fowlie publishes a high-level review](#)
- [Nanohertz gravitational waves are cool but not supercool](#)
- [SMP wins 8 NSFC grants in 2024](#)
- [28 projects approved](#)

Selected external news articles

- [Phys.org](#) and [Monash University press](#) about *Prog. Part. Nucl. Phys.*
- [Phys.org](#) about *Phys. Rev. Lett.* paper
- [Big Think](#) about *Nature Commun.* paper
- [ABC News \(Norway\)](#) about *Eur. Phys. J. C* paper

DEPARTMENTAL

- 2024 – ■ *Departmental Events Officer*. Organizing regular seminars despite limited budget – see [Seminars @ Department of Physics](#). Growing connections to other academic units. More than 10 seminars in 2024 and 9 seminars so far in 2025, e.g., [Prof. John Dennis](#)
- 2023 – ■ *Departmental IT Officer*. Initiated and leading department webpage update to raise departmental profile — see [Department of Physics](#)
- 2019 – 2023 ■ Built and maintained group [webpage](#)
- Organized [online seminar series](#), including [event with Nobel Laureate](#) with audience of over 3,500

COLLABORATIONS

- 2023 – CIRCULAR ELECTRON-POSITRON COLLIDER (CEPC) — A proposed next-generation world-leading experiment in fundamental science [GAMBIT](#) — International collaboration performing statistical analyses of models of new physics
- 2024 – 2025 [NANOGrav](#) — World-leading pulsar-timing array search for gravitational waves to contribute towards data analysis
- 2011 – 2013 BAYESFIT — Bayesian analyses of supersymmetric models in light of first run of LHC, lead by [Prof. Roszkowski](#)

EDITORIAL

Referee for physics journals: *Nature Commun.* [97%; Q1; CS: 24.9], *Phys. Rev. Lett.* [94%; Q1; CS: 16.5], *Phys. Rev. D* [91%; Q1; CS: 8.3], *Eur. Phys. J. C* [91%; Q1; CS: 8.1], *J. Phys. G* [87%; Q1; CS: 7.6], *Ann. Phys.* [68%; Q2; CS: 4.5], *Metrologia* [58%; Q2; CS: 2.8], *Nucl. Phys. B* [76%; Q1; CS: 5.5], *SciPost Physics* [88%; Q1; CS: 9.0], and *Int. J. Mod. Phys. A* [51%; Q2; CS: 3.0]

Referee for statistics journal *Stat. Pap.* [67%; Q2; CS: 2.8]

Editor for [Journal of Nanjing Normal University, Physical Sciences](#)

UNIVERSITY

- 2025 ■ Participated in Internal Peer Review for 2025 NSFC RFIS candidates, June 9
- 2024 ■ Presented at Experience Sharing for Research Fund for International Scientists, 11th December
- 2023 ■ Jiangsu CEAA Interviewer at XJTU — 2 days
- 2023 – ■ Coordinate University staff social football & tennis clubs

Education and other relevant experience

- 2009 – 2013 Ph.D., University of Sheffield, UK
[Bayesian Approach to Investigating Supersymmetric Models](#). Supervised by [Prof. Roszkowski](#). Viva passed with minor corrections, examined by [Prof. King \(University of Southampton\)](#) and [Prof. van de Bruck \(University of Sheffield\)](#)
- 2009 – 2010 [Scuola Internazionale Superiore di Studi Avanzati \(SISSA\)](#), Trieste, Italy
 Six-month placement studying advanced topics in particle physics and related subjects
- 2005 – 2009 M. PHYS, University of Durham, UK
 First-class four-year undergraduate Master's in Physics. Final-year modules included Advanced Theoretical Physics (82%) and Particle Theory (90%). Master's project, *The Search for Dark Matter at the Linear Collider*, supervised by [Prof. Moortgat-Pick](#) (73%)
- 2006 & 2007 Summer placement at electricity supplier E-ON about numerical simulation of atmosphere with parallel computing