

Jonte Roderick Hance

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EXPERIENCE

Senior Lecturer (Associate Professor)

Mar 2024–Now

School of Computing, Newcastle University, Newcastle, UK

Building a research group investigating applied quantum foundations, and developing teaching on quantum information. Senior Lecturer (Associate Professor) from March 2026; previously Lecturer (Assistant Professor) 2024–2026.

Administration: Founder and Group Lead for the Quantum Group in the School of Computing (primary research group affiliation for 3 academics and their teams, secondary affiliation for 4 other academics and their teams) (2026–Now). School of Computing (SoC) Rep on Faculty Working Group on Quantum Research and Teaching. Helped develop new **BSc Computing and Mathematics** Programme (SoC Lead for Quantum Information and Computing specialism). Previously: AI2030 Specialist Offering Sub-Group Lead; Staff Facilitator for SoC Student-Staff Committee for Taught Programmes (2024–25); SoC EDI Lead for Students (2024–25); Interim Group Lead of the **Advanced Model-Based Engineering and Reasoning (AMBER) Research Group**, line-managing 7 Lecturers and 3 Senior Lecturers, despite being a Lecturer at the time (2025).

Teaching: Leading Quantum Topic for **CSC2034: Introducing Contemporary Topics in Computing**. Reintroduced **CSC3132: Introduction to Quantum Computing**, Module Leader 2025–26, now passed to Ittoop Puthoor. Developing **CSC3133: Quantum Algorithms** as Module Leader (to begin AY 2027–28). Passed **Newcastle Educational Practice Scheme (NEPS)**, earning **Fellowship of the Higher Education Academy/Advance HE (FHEA)**—application later used on NEPS course as exemplar application.

Supervision: Currently supervising 5 PDRAs (**Nicolas Underwood** and **Peter TJ Bradshaw**, funded through my EPSRC QTCA Fellowship, 2025–30; **Fionnuala Curran** and **Saheli Mukherjee**, funded through my EPSRC NIA, 2026–29; and **Irina Basieva**, funded through UKRI CRC grant, 2026–28), and one PhD candidate. Co-supervising 1 PDRA (**David Headley**, funded through EPSRC Mathematical Sciences Small Grant, 2026). Previously supervised 3 **MSc Advanced Computer Science** project students, 1 **MSc Data Science and AI project student**, 2 **MSc Computer Science** project students, 14 **BSc Computer Science** project students, 1 visiting **MSc Quantum Technologies** student from Politecnico di Torino, and 4 summer research interns (3 funded via my Royal Society Research Grant, 1 funded by EPSRC Edge AI Hub). Co-supervised 1 Licentiate student, and 7 **BSc Psychology** project students (cross-faculty). Examined 3 PhD theses, 17 MSc dissertations, and 23 BSc dissertations.

Phoenix Postdoctoral Research Fellow

Apr 2023–Feb 2024

Hiroshima University, Hiroshima, Japan

Researching the interplay between quantum foundations and quantum technologies, focussing on the meaning and use of weak values. Awarded prestigious international research fellowship by Hiroshima University.

Graduate Teacher Level 1 and 2

Sep 2020–May 2022

University of Bristol, Bristol, UK

Taught more than 400 hours over 2 years, across the Faculty of Engineering and School of Physics, on: Quantum Mechanics I & II (part of **PHYS20028** and **PHYS20029** respectively) (TA 2021–22); **EENG25000** (TA 2021–22); **EMAT10100** and **EMAT20200** (Senior drop-ins tutor 2020–22); **PHYS11400** (Seminar tutor 2020–21); **PHYS10005** and **PHYS10006** (Marker 2020–21)

Research and Development Consultant

Sep 2018–Dec 2020

dotQuantum, Bristol, UK

Developed IP, specifically protocols for quantum key distribution. Co-inventor on pending patent [gb 1821135.9](#).

Summer Research Intern

2018, 2019

Quantum Engineering Technology Laboratories, University of Bristol, Bristol, UK

Investigated counterfactual communication, first experimentally (measuring weak values using bulk optics), then theoretically. Funded to travel to Sydney for IONS KOALA 2018 to present research, and won Best Poster Prize.

EDUCATION

PhD Electrical and Electronic Engineering

Oct 2019–Mar 2023

Quantum Engineering Technology Laboratories, University of Bristol, Bristol, UK

Thesis title: *The interplay between quantum foundations and quantum technologies*

Received UK Quantum Communications Hub/ University of York DTP Full Scholarship & Stipend. Supervised by Prof John Rarity FRS and Prof James Ladyman. More information available [here](#). Nominated for Faculty Thesis Prize.

MSci (Hons) Physics and Philosophy

Oct 2014–Jun 2019

University of Bristol, Bristol, UK. Classification: First Class Honours

FUNDING

~£3.3 million awarded as PI, ~£16 million awarded as Co-I, ~£15 million at review.

EPSRC Quantum Technologies Career Acceleration Fellowship (PI, 2025–30): **£1,722k fEC** (£1,273k from funder), covering 50% of my time plus 2 PDRAs, all for 5 years, plus travel and consumables. Plus, £275k in-kind from Project Partners.

EPSRC New Investigator Award (PI, 2026–29): **£894k fEC** (£715k from funder). Covering 20% of my time, plus 2 PDRAs, all for 3 years, plus travel and consumables. Additionally, secured £310k in in-kind contributions from Project Partners.

SPRIN-D Funke QuantumSense Exploration (PI, 2026–27): **€450k** (~£360k) over 5 months, covering 50% of my time, plus 5 PDRAs, and travel and consumables.

Royal Society Research Grant (PI, 2025–26): **£28k** over 1 year, covering £18k travel and 3 2-month summer studentships.

EPSRC National Edge AI Hub for Real Data (Co-I, 2024–29): Quantum Machine Learning Research Theme Lead for **£12.85 million fEC** AI Hub (£10.28 million from funder). Joined as retroactive Co-I May 2025.

UKRI Cross Research Council Responsive Mode (Co-I, 2026–28): **£1,307k fEC** (£927k from funder). Covering 25% of PI (**Barbara-Anne Robertson**)’s time and 10% of my time plus 3 PDRAs, all for 2 years, plus travel and consumables.

Innovate UK’s UK-Germany Collaborative Innovation for Quantum Technologies 2026 (Co-I, 2026–28) - Project Total **£1.97 million** from funder, (UK Team **£844k** from funder). Additional £528k contribution from UK Project Partners.

EPSRC Mathematical Sciences Small Grant (Co-I, 2026): **£111k fEC** (£80k from funder). Covering 5% each of my and PI (**Nick Chancellor**)’s time plus 1 PDRA, all for 9 months.

Newcastle Internal: ~£87k as **PI**, £4.5k as **Co-I**, plus **£31.5k** EPSRC Impact Acceleration Account Award (**PI**, 2026–27)

Hiroshima University Phoenix Postdoctoral Fellowship for Research (Fellow, 2023–26): Awarded one of four prestigious international fellowships. Total value (incl ≤ 3 years salary, research budget, and relocation) of **¥20 million** ($\sim$ £100k).

UK Quantum Communications Hub/EPSRC University of York Doctoral Training Partnership (Student, 2019–23): Full 42-month DTP Home PhD studentship (with £5000 Research Training Support Grant). Worth **~£75k** total.

At Review: 2x EPSRC Hybrid Algorithms for Quantum Advantage Bids (Co-I) - £2.9 million and £2.6 million fEC respectively; ARIA Activation Partnership Funding (Co-I) - £9.2 million.

EXTERNAL SERVICE, ESTEEM & OUTREACH

Equity, Diversity, and Inclusion: Invited Speaker and Panellist (“A Diverse World” Panel) at IOP’s [Quantum Science and Technology Conference 2025](#) (Royal Institution); APS Forum on Diversity and Inclusion (FDI) Executive Committee Member-at-Large 2024–26; APS Career Mentoring Fellow 2023–24; QETLabs DEI Committee Member 2022–23

In the Media: Interviewed for and mentioned/quoted in six New Scientist articles ([12/5/2021 - Cover Story](#); [12/2/2024; 4/9/2024 - Cover Story](#); [11/1/2025 - Cover Story](#); [31/5/2025](#); [14/8/2025](#)) and four Physics World articles ([29/4/2025 - Cover Story](#), [27/5/2025](#), [23/9/2025](#), [24/9/2025](#)); quoted in [Scientific American](#) and [Spektrum der Wissenschaft/Spektrum.de](#); featured on Hiroshima TV’s Nightly News Programme ([4th Dec 2023](#)); quoted/work mentioned in articles on online science news sites (incl VICE, IFLScience, Phys.org, Heise/c’t).

Policy Work: Co-organiser and contributor to the [Quantum Technologies APPG](#)’s first white paper; [EPSRC Quantum Technologies Early-Career Forum](#) Member 2025–2028; Contributor to [Labour Tech](#)’s white paper “Fund or Fade: Powering a Sovereign Quantum Britain”; Contributor to UK Parliamentary Office of Science and Technology’s [POSTNote on Quantum Computing, Sensing, and Communications](#); DSIT/IOP Quantum Skills Taskforce Workshop Member (10/5/2024)

Committee Membership: [IOP QQQ Group](#) Committee Member 2025–28; [IOP North East Branch](#) Committee Member 2025–28; [IOP Mathematics and Theoretical Physics Group](#) Committee Member 2025–28; [Philosophy of Physics Society](#) Ordinary Trustee 2025–27

Conference Organising: IOP Photon Organising Committee Chair 2028 and [2026](#) (250 attendees, 4 days, 4 parallel streams); [SAGe Faculty Research Conference](#) Organising Committee Chair 2026 (327 attendees, 2 days, 4 parallel streams); NEWTON-Q Organising Committee Member [2026](#) and [2025](#); [IOP QuAMP 2025](#) Organising Committee Member; APS April Meeting 2024 Undergraduate Poster and Talk Reviewer; APS March Meeting DQI Abstract Sorter (2024, 2025); [BQIT:22](#) Programme Committee Lead and Conference Board Member

Conference Sessions Chaird (13): [QIP26](#) (12th June, Session 2); [SAGe Research Conference 2026](#); IOP QuAMP 2025 (3rd September, Session 3); APS Global Physics Summit 2025 ([VIR-K01: Quantum Information Processing](#); [VIR-G05: Virtual Poster Session II](#); [VIR-A08: Virtual Undergraduate Research I](#)); APS April Meeting 2024 ([DD03 V: Data Science and AI/ML in Physics](#); [JJ01 V: Forums & GPER II](#)); APS March Meeting 2024 ([PP01 V: Quantum Annealing and Quantum Foundations](#); [AA06 V: General Physics](#); [NN00 Virtual Poster Session III](#)); [Bonn Superdeterminism and Retrocausality Workshop 2022](#); [BQIT:22](#)

Journal Editorship: *Phil. Trans. Roy. Soc. A* Guest Editor (Theme Issue “New Approaches to the Foundations of Quantum Mechanics”); *J. Phys. Commun.* Editorial Board Member (2024–26); *J. Phys. Photonics* Guest Editor ([Focus Issue on Photonics for Quantum Foundations](#))

Journal Peer Reviews (115): *Phys. Rev. Lett.* (5); *Rev. Mod. Phys.* (1); *Nat. Commun.* (2); *Quantum Sci. Technol.* (10); *Nat. Photonics* (1); *Rep. Prog. Phys.* (3); *Brit. J. Philos. Sci.* (1); *Quantum* (3); *npj Quantum Inf.* (3); *New J. Phys.* (5); *APL Quantum* (1); *AVS Quantum Science* (1); *J. Phys. A: Math. Theor.* (3); *Proc. R. Soc. A* (2); *Phil. Trans. R. Soc. A* (1); *J. Phys. Photonics* (3); *Mater. Quantum Technol.* (2); *Opt. Lett.* (1); *Optica* (2); *Opt. Quant. Electron.* (1); *Phys. Rev. Research* (6); *Phys. Rev. Applied* (2); *Phys. Scr.* (5); *Sci. Rep.* (6); *Found. Phys.* (5); *Stud. Hist. Philos. Sci.* (2); *Euro. Jnl. Phil. Sci.* (2); *Am. J. Phys.* (6); *Mod. Phys. Lett. A* (1); *J. Phys. Commun.* (8); *Phys. Rev. A* (14); *IEEE Trans. Instrum. Meas.* (5); *Quantum Stud.: Math. Found.* (2).

Awarded Institute of Physics Trusted Reviewer status in 2021. *Quant. Sci. Technol.* Outstanding Reviewer 2024.

Grant Reviews (14): UKRI Talent Peer Review College Member (1); EPSRC Peer Review College Member (4); British Council ISPF College of Reviewers Member (9)

Outreach: NQCC Hackathon 2026 Judge; AIoT Quantum Edge Roundtable Panellist; Sigma Xi High School Student Research Showcase 2024 Judge; [The Quantum Horse: The Pantomime](#) Guest Quantum Scientist; [It’s About Time](#) Podcast Guest Speaker

Industry Engagement: Invited Speaker, Unisys Future Matters EMEA 2026

Other Esteem Indicators: Invited Member of [Foundational Questions Institute \(FQxI\)](#); Named one of the “Quantum 100” for the UN’s International Year of Quantum; Invited Discussant, [Oxford Quantum Centenary Conference: What Quantum?](#)

PUBLICATIONS (36)

Corresponding authorship: [§] denotes submitting author, [†] denotes email address on paper.

Research Articles (23)

Phase-Space Representations of Quantum Error-Correcting Codes

Bozetto, E., Hance, J.R.[†] (2026). *Phys. Rev. Res.* (Accepted, In Press)

The burden of Fundamentality: Metaphysical ambiguities and the issue of Superdeterminism

Cafiero, G., Molinari, L., Hance, J.R.^{§,†} (2026). *Philos. Sci.* (Accepted, In Press)

External quantum fluctuations select measurement contexts

Hance, J.R.^{§,†}, Ji, M., Matsushita, T., & Hofmann, H.F.[†] (2026). *Quantum* **10**, 2106.

Limits of Absoluteness of Observed Events in Timelike Scenarios: A No-Go Theorem

Mukherjee, S.[†], Hance, J.R.^{§,†} (2026). *Phys. Rev. Res.* **8**(2), 023066.

Quantum Contextuality Requires Counterfactual Gain

Sagawa, Y., Hance, J.R.[†], Hofmann, H.F.[†], & Ono, T.^{§,†} (2026). *Phys. Rev. A* **113**(1), 012221.

Incompatibility of Deterministic Underlying States with a Counterfactual account of Lüders’ rule

Tezzin, A.[†], Amaral, B., & Hance, J.R.^{§,†} (2025). *Phys. Rev. A* **112**(5), L050202. (Letter)

Sufficiency of the counterfactual account of Lüders’ rule to rule out ontological models of quantum mechanics

Tezzin, A.[†], Amaral, B., & Hance, J.R.^{§,†} (2025). *Phys. Rev. A* **112**(5), 052208.

Experimental Tests of Invariant Set Theory

Hance, J.R.^{§,†}, Palmer, T.N., & Rarity, J. (2025). *Phys. Scr.* **100**(6), 065123.

Deterministic Teleportation and Universal Computation Without Particle Exchange

Salih, H., Hance, J.R.^{§,†}, McCutcheon, W., Rudolph, T., & Rarity, J. (2025). *J. Phys. Commun.* **9**(4), 045004.

Is the dynamical quantum Cheshire cat detectable?

[Hance, J.R.^{§,†}, Ladyman, J., & Rarity, J.G. \(2024\). *New J. Phys.* **26**\(7\), 073038.](#)

Counterfactuality, back-action, and information gain in multi-path interferometers

[Hance, J.R.^{§,†}, Matsushita, T., & Hofmann, H.F.[†] \(2024\). *Quant. Sci. Technol.* **9**\(4\), 045015.](#)

Taxonomy for Physics Beyond Quantum Mechanics

[Adlam, E.C., Hance, J.R.^{§,†}, Hossenfelder S., & Palmer, T.N. \(2024\), *Proc. R. Soc. A* **480**\(2294\), 20230779.](#)

Tracing quantum correlations back to collective interferences

[Ji, M.^{§,†}, Hance, J.R.[†], & Hofmann, H.F.[†] \(2024\). *New J. Phys.* **26**\(6\), 063021.](#)

Contextuality, Coherences, and Quantum Cheshire Cats

[Hance, J. R.^{§,†}, Ji, M., & Hofmann, H. F.[†] \(2023\). *New J. Phys.* **25**\(11\), 113028.](#)

Weak values and the past of a quantum particle

[Hance, J.R.^{§,†}, Rarity, J., & Ladyman, J.[†] \(2023\). *Phys. Rev. Res.* **5**\(2\), 023048.](#)

Supermeasured: Violating Bell-Statistical Independence without violating physical statistical independence

[Hance, J.R.^{§,†}, Hossenfelder S., & Palmer, T.N. \(2022\). *Found. Phys.* **52**\(4\), 81.](#)

The wave function as a true ensemble

[Hance, J.R.^{§,†}, & Hossenfelder S. \(2022\). *Proc. R. Soc. A* **478**\(2262\), 20210705.](#)

The laws of physics do not prohibit counterfactual communication

[Salih, H.^{§,†}, McCutcheon, W., Hance, J.R., & Rarity, J. \(2022\). *npj Quantum Inf.* **8**\(1\), 60.](#)

Could wavefunctions simultaneously represent knowledge and reality?

[Hance, J.R.^{§,†}, Rarity, J., & Ladyman, J. \(2022\). *Quantum Stud.: Math. Found.* **9**\(3\), 333-341.](#)

Counterfactual Ghost Imaging

[Hance, J.R.^{§,†}, & Rarity, J. \(2021\). *npj Quantum Inf.* **7**\(1\), 88.](#)

Backscatter and spontaneous four-wave mixing in micro-ring resonators

[Hance, J.R.^{§,†}, Sinclair, G.F., & Rarity, J. \(2021\). *J. Phys. Photonics* **3**\(2\), 025003.](#)

How Quantum is Quantum Counterfactual Communication?

[Hance, J.R.^{§,†}, Ladyman, J., & Rarity, J. \(2021\). *Found. Phys.* **51**\(1\), 12.](#)

Exchange-free computation on an unknown qubit at a distance

[Salih, H.^{§,†}, Hance, J.R., McCutcheon, W., Rudolph, T., & Rarity, J. \(2021\). *New J. Phys.* **23**\(1\), 013004.](#)

Review Articles (5)

Entangled Futures: Quantum Computing’s Potential and Challenges in Computer Science

[Jha, D.N.^{§,†}, Hance, J.R.[†], Szyldo, T.[†], Chancellor, N.[†], Rana, O.F.[†], Ranjan, R.[†] \(2026\). *I.T. Prof.* \(Accepted, In Press\).](#)

Warring Contextualities – Provably Classical vs Provably Nonclassical

[Bozetto, E., Hance, J.R.^{§,†} \(2026\). *Phil. Trans. Roy. Soc. A* \(Accepted, In Press\).](#)

Fermion and Boson Pairs in Beamsplitters and MZIs

[Hance, J.R.^{§,†} \(2025\). *J. Phys. Photonics* **7**\(1\), 012001.](#)

Counterfactual restrictions and Bell’s theorem

[Hance, J.R.^{§,†} \(2024\). *J. Phys. Commun.* **8**\(12\), 122001.](#)

What does it take to solve the measurement problem?

[Hance, J.R.^{§,†}, & Hossenfelder S. \(2022\). *J. Phys. Commun.* **6**\(10\), 102001.](#)

Comments and Replies (5)

Reply to “Comment to ‘The laws of physics do not prohibit counterfactual communication’ ”

[Salih, H., Hance, J.R.^{§,†}, McCutcheon, W., and Rarity, J.[†] \(2025\). *npj Quantum Inf.* **11**\(1\), 100.](#)

Comment on “Experimentally adjudicating between different causal accounts of Bell-inequality violations via statistical model selection”

[Hance, J.R.^{§,†}, & Hossenfelder S. \(2024\). *Phys. Rev. A* **109**\(2\), 026201.](#)

Reply to Comment on “Weak Values and the Past of a Quantum Particle”

[Hance, J.R.^{§,†}, Rarity, J., & Ladyman, J.[†] \(2023\). *Phys. Rev. Res.* **5**\(4\), 048002.](#)

Bell’s theorem allows local theories of quantum mechanics

[Hance, J.R.^{§,†}, & Hossenfelder S. \(2022\). *Nat. Phys.* **18**\(12\), 1382.](#)

Comment on “Scheme of the arrangement for attack on the protocol BB84”

[Hance, J.R.^{§,†}, & Rarity, J. \(2021\). *Optik* **243** 167451.](#)

Opinion Pieces (3)

Why I stopped submitting my work to for-profit publishers

[Hance, J.R.^{§,†} \(2025\). *Phys. World* **38**\(7\), 17. Republished in *University World News*.](#)

Why academia should be funded by governments, not students

[Hance, J.R.^{§,†} \(2025\). *Phys. World* **38**\(1\), 21.](#)

Can mass and momentum separate? Probably not. Is it worth reading about? Definitely!

[Hance, J.R.^{§,†} \(2024\). *Quantum Views* **8**, 83. \(Invited Perspective\)](#)

RESEARCH TALKS

Invited Conference Talks (11): FQMT26; QIP26; Lakeside Quantum Dialogue 2026; QIP25; John Rarity FRS Symposium (Bristol); 2nd Kyushu-Hiroshima QJM Workshop (2024); Chubu Quantum Workshop 2023; 1st Kyushu-Hiroshima QJM Workshop (2023); Trieste Fundamental Problems in Quantum Physics 2022; Åskloster Seminar 2022; Bonn Superdeterminism & Retrocausality Workshop 2022;

Invited Seminar/Group Talks (14): Oxford Philosophy of Physics Seminar; Newcastle Computing Scalable Group Research Seminar 17/1/2025; Oxford Quantum Information Theory Society Talk; Bristol Chaos (Physics Society) Talk; Newcastle AMBER Group Seminar Talk 16/5/24; Newcastle MSP Quantum Group Seminar Talk 8/5/24; Vedral Group (Oxford) Seminar Talk

26/4/24; Bristol Philosophy of Physics Weekly Seminar 6/3/24; Bristol QIT Weekly Seminar 28/2/24; Kyushu-Hiroshima QJM Online Monthly Talk 21/8/23; Vedral Group (Oxford) Seminar Talk 2/12/22; IPAQS Heriot-Watt Weekly Theory Talk 25/9/2022; IPAQS Heriot-Watt Weekly Theory Talk 13/1/2022; QETLabs/Photonics Bristol Weekly Talk 1/4/2021

Contributed Conference Talks (32): [FQT Girtton \(Cambridge\) 2026](#); [Testing Quantum Foundations in the 2025 Quantum Year](#); 3rd Kyushu-Hiroshima QJM Workshop (2025); [QuAMP 2025](#); [FOUNDATIONS2025](#); [2nd FoQaCiA Workshop](#) APS Global Physics Summit 2025 ([VIR-C01:9](#)); [Vadstena 2024](#); [TMF2024](#); [QuaSIT 2024](#); [IOP Photon 2024](#); [NQM 10](#); [QIP24](#); [1st FoQaCiA Workshop](#) APS DAMOP Meeting 2024 ([F11.00009](#)); DPG Berlin 2024 ([QI 1.6](#)); APS April Meeting 2024 ([JJ01:00002](#)); APS March Meeting 2024 ([PP01:00007](#)); IEICE QIT49 (OIST) 2023 (Talk 26); [IEICE QIT48 Kyoto 2023](#); [IOP Photon 2022](#); Optica APC 2022 ([NpW2G.5](#)); Optica OSSC 2022 ([STu4G.4](#)) [BQIT:22](#); [DPG Heidelberg 2022](#); [ICQIF 2022](#); IOP Silicon Quantum Information Processing Workshop 2021 (2-minute pitch presentation); OSA FiO+LS 2021 ([FM5C.2](#)); OSA OSSC 2021 ([SW5F.5](#)); CLEO/Europe-EQEC 2021 ([EB-7.3](#)); Bristol SCEEM PGR Conference 2021 (3rd Prize); OSA IONS Exeter 2019

PREPRINTS UNDER REVIEW (18)

Negative quasiprobabilities redistribute (and complex ones reduce) the information in unabsorbed photons

[Hance, J.R.[†]](#) [arXiv:2610.00740](#)

Frame dependence of Kochen-Specker contextuality for relativistic spin systems

[Hance, J.R.[†]](#), [Campos Delgado, R.[†]](#) [arXiv:2610.00274](#)

The Quantum Plumber's Problem

[Underwood, N.G.[†]](#), [Hofmann, H.F.](#), [Hance, J.R.[†]](#) [arXiv:2609.11416](#)

Why three? A two-level system with four mutually unbiased questions

[Hance, J.R.[†]](#) [arXiv:2609.10078](#)

Impact of Data Loss in Postprocessing on Training and Inference of Quantum Neural Networks

[Panambalom, S.V.[†]](#), [Altamura, E.](#), [Chancellor, N.](#), [Hance, J.R.[†]](#) [arXiv:2609.05060](#)

Convex conservation of von Neumann entropy implies unitarity or antiunitarity

[Underwood, N.G.[†]](#), [Hance, J.R.[†]](#) [arXiv:2608.29373](#)

What meter interference can tell us about the statistics of weak measurements

[Hofmann, H.[†]](#), [Matsumura, T.](#), [Isobe, M.](#), [Hance, J.R.[†]](#) [arXiv:2608.05494](#)

Modelling Emotional Memory in Children with Tensor Networks

[Groves, H.](#), [Jackson, L.F.](#), [Robertson, B.A.[†]](#), [Hance, J.R.[†]](#) [arXiv:2606.28470](#)

Classical Limit: Dissipation of Spekkens' Generalised Contextuality under Decoherence

[Bozetto, E.](#), [Hance, J.R.[†]](#) [arXiv:2605.09558](#)

How to unitarily map between any two pure states with a single closed-form exponential

[Bradshaw, P.T.J.[†]](#), [Gouveia, M.](#), [Hance, J.R.[†]](#) [arXiv:2604.16285](#)

The non-local Hong-Ou-Mandel effect

[Kodama, Y.[†]](#), [Hance, J.R.[†]](#), [Hofmann, H.F.[†]](#) [arXiv:2604.10886](#)

Noncontextual versus contextual interferometry

[Hance, J.R.[†]](#), [Krnicek, J.](#), [Larsson, J.-Å.[†]](#) [arXiv:2601.13109](#)

Quantum-Like Correlations from Local Hidden-Variable Theories Under Conservation Law

[Garza, A.J.[†]](#), [Hance, J.R.[†]](#) [arXiv:2511.06043](#)

Interaction-Free Polarimetry

[Hance, J.R.[†]](#), & [Rarity, J.](#) [arXiv:2207.13539](#)

Comment on "Why interference phenomena do not capture the essence of quantum theory"

[Hance, J.R.[†]](#), & [Hossenfelder, S.](#) [arXiv:2204.01768](#)

Reply to arXiv:2111.13357 ("The Quantum Eraser Non-Paradox")

[Bracken, C.](#), [Hance, J.R.[†]](#), & [Hossenfelder, S.](#) [arXiv:2112.00436](#)

The quantum eraser paradox

[Bracken, C.](#), [Hance, J.R.[†]](#), & [Hossenfelder, S.](#) [arXiv:2111.09347](#)

Properties of Invariant Set Theory

[Hance, J.R.](#), [Hossenfelder, S.](#), & [Palmer, T.N.[†]](#) [arXiv:2108.08144](#)

OTHER PUBLISHED CONFERENCE ABSTRACTS

SPIE Optics + Photonics 2025 ([136180H](#)); SPIE Optics + Photonics 2024 ([13148-19](#)); Quantum 2.0 2024 ([QW3A.7](#)); CLEO Pacific Rim 2022 (P-CTH6-13); Quantum 2.0 2022 ([QW2A.18](#)); CLEO 2021 ([JTU3A.14](#)); OSA QIM V 2019 ([T5A.50](#))

MEMBERSHIPS

Advance HE: [Fellow \(FHEA\)](#) 2025–Now; prev [Associate Fellow \(AFHEA\)](#) 2021–25

Institute of Physics: [Member \(MInstP\)](#)

Member of: [FQxI](#); [London Mathematical Society](#); [Center for SpaceTime and the Quantum](#); [Philosophy of Physics Society](#); [International Society for Relativistic Quantum Information](#); [European COST Action in Relativistic Quantum Information](#)