



Andrew N. Jordan is an American theoretical physicist specializing in quantum physics, condensed matter physics, quantum optics, and related fields.^[1] He is currently a professor of physics and managing director of the Institute for Quantum Studies at Chapman University, where he holds the Kennedy Chair in Physics.^[2] He is also affiliated with the University of Rochester as Professor of Physics (Research).^[3] Jordan's research explores fundamental questions in quantum mechanics, including weak measurements, quantum information processing, stochastic processes, and nanophysics. His work has significantly contributed to the understanding of quantum measurement theory and its applications in precision sensing and quantum technologies.^[4] Andrew N. Jordan's h-index is 56 (all-time) according to his Google Scholar profile, with 11,774 total citations and an i10-index of 138^[5]

Early life and education

Jordan was born on July 30, 1975, and grew up in Texas. He earned his Bachelor of Science degree in physics and mathematics from Texas A&M University in 1997.^[1] He then pursued graduate studies at the University of California, Santa Barbara, where he received his Ph.D. in theoretical physics in 2002



Born	July 30, 1975 Texas, United States
Fields	Theoretical physics Quantum physics Condensed matter physics Quantum optics
Institutions	Chapman University (Professor of Physics; Managing Director, Institute for Quantum Studies; Kennedy Chair in Physics) University of Rochester (Professor of Physics)
Alma mater	Texas A&M University (BS, 1997) University of California, Santa Barbara (PhD, 2002)

supervised by [Mark Srednicki](#).^{[1][3]} His doctoral work laid the foundation for his later research in quantum theory.

Academic career

After completing his Ph.D., Jordan served as a postdoctoral fellow at the [University of Geneva](#) from 2002 to 2005 with [Markus Büttiker](#).^[1] In 2006, he joined the [University of Rochester](#) as an assistant professor of physics. He was promoted to associate professor with tenure in 2012 and to full professor in 2015. During his time at Rochester, Jordan was affiliated with the Center for Coherence and Quantum Optics and the Rochester Theory Center for Optical Science and Engineering.^[3] He also became an affiliated scholar with Chapman University's Institute for Quantum Studies in 2012.^[2] In 2021, Jordan transitioned to Chapman University as professor of physics and co-director of the Institute for Quantum Studies, while maintaining a research professor position at the University of Rochester. In 2024, he holds the Kennedy Chair in Physics at Chapman.^[2] Jordan's research explores fundamental questions in quantum mechanics, including weak measurements, quantum information processing, stochastic processes, and nanophysics.^[5] He is the managing director of the Institute for Quantum Studies.^[6] Jordan has held several editorial and advisory positions. He served as managing editor of *Quantum Studies: Mathematics and Foundations* in 2018 and as co-editor-in-chief from 2019.^[7] In 2024, he was appointed Divisional Associate Editor for Foundations of Quantum Mechanics at Physical Review Letters.^[8] Andrew Jordan serves as a Principal Investigator of the Southern California Quantum Foundations Hub at Chapman University, funded by a \$2.43 million grant from the John Templeton Foundation in 2024

Doctoral advisor	Mark Srednicki
Known for	Quantum measurement theory Weak value amplification Precision sensing and quantum technologies <i>Quantum Measurement: Theory and Practice</i> (2024)
Awards	Kennedy Chair in Physics (2024) Medal of Honor, FQMT (2024) Simons Fellow in Theoretical Physics (2017) NSF CAREER Award (2009)

Research

Jordan's research spans theoretical quantum physics, condensed matter physics, and quantum optics, with particular emphasis on nanophysics, weak quantum measurement theory, quantum information processing, and stochastic processes. One of Jordan's contributions is in the field of weak value amplification, a technique that enhances the sensitivity of measurements beyond conventional limits.^[9] His 2009 paper on ultrasensitive beam deflection measurement via interferometric weak value amplification has applications in precision metrology and quantum sensing.^[9] Jordan has also co-authored a review on quantum weak values, elucidating their basics and applications in quantum mechanics.^[10] He has investigated topics such as [programmable Heisenberg interactions in Floquet qubits](#), [reservoir-free decoherence in flying qubits](#), [experimental realizations of supergrowing optical fields](#),^[11] and AI-powered control of quantum systems.^[12] In 2024, Jordan co-authored the book *Quantum Measurement: Theory and Practice* with Irfan A. Siddiqi, published by Cambridge University Press.^[4]

Awards and honors

- [NSF CAREER Award, 2009^{\[13\]}](#)
- [Simons Fellow in Theoretical Physics, 2017^{\[14\]}](#)
- Medal of Honor for scientific achievements and support of the FQMT conferences, Frontiers of Quantum and Mesoscopic Thermodynamics conference, Prague, Czech Republic, 2024^[15]
- Kennedy Chair in Physics, Chapman University, 2024^[2]
- University of Rochester Department of Physics and Astronomy Teaching Excellence Award, 2010^[2]

Selected publications

- Dixon, P. B.; Starling, D. J.; Jordan, A. N.; Howell, J. C. (2009). "Ultrasensitive beam deflection measurement via interferometric weak value amplification". *Physical Review Letters*. **102** (17): 173601. doi:10.1103/PhysRevLett.102.173601 (<https://doi.org/10.1103%2FPhysRevLett.102.173601>).
- Dressel, J.; Malik, M.; Miatto, F. M.; Jordan, A. N.; Boyd, R. W. (2014). "Colloquium: Understanding quantum weak values: Basics and applications". *Reviews of Modern Physics*. **86** (1): 307–316. doi:10.1103/RevModPhys.86.307 (<https://doi.org/10.1103%2FRevModPhys.86.307>).
- Jordan, Andrew N.; Siddiqi, Irfan A. (2024). *Quantum Measurement: Theory and Practice*. Cambridge University Press. ISBN 978-1-009-10006-9.
- Nguyen, Long B.; Kim, Yosep; Hashim, Akel; Goss, Noah; Marinelli, Brian; Bhandari, Bibek; Das, Debmalya; Naik, Ravi K.; Kreikebaum, John Mark; Jordan, Andrew N.; Santiago, David I.; Siddiqi, Irfan (2024). "Programmable Heisenberg interactions between Floquet qubits". *Nature Physics*. **20** (2): 240–246. arXiv:2211.10383 (<https://arxiv.org/abs/2211.10383>). Bibcode:2024NatPh..20..240N (<https://ui.adsabs.harvard.edu/abs/2024NatPh..20..240N>). doi:10.1038/s41567-023-02326-7 (<https://doi.org/10.1038%2Fs41567-023-02326-7>).
- Piccione, Nicolò; Bresque, Léa; Jordan, Andrew N.; Whitney, Robert S.; Auffèves, Alexia (2024-05-30). "Reservoir-Free Decoherence in Flying Qubits" (<https://link.aps.org/doi/10.1103/PhysRevLett.132.220403>). *Physical Review Letters*. **132** (22) 220403. arXiv:2305.02746 (<https://arxiv.org/abs/2305.02746>). Bibcode:2024PhRvL.132v0403P (<https://ui.adsabs.harvard.edu/abs/2024PhRvL.132v0403P>). doi:10.1103/PhysRevLett.132.220403 (<https://doi.org/10.1103%2FPhysRevLett.132.220403>). ISSN 0031-9007 (<https://search.worldcat.org/issn/0031-9007>). PMID 38877926 (<https://pubmed.ncbi.nlm.nih.gov/38877926>).
- Hu, Le; Jordan, Andrew N. (2024). "Probabilistic Unitary Formulation of Open Quantum System Dynamics". *Physical Review A*. **110** (6) 062205. arXiv:2307.05776 (<https://arxiv.org/abs/2307.05776>). Bibcode:2024PhRvA.110f2205H (<https://ui.adsabs.harvard.edu/abs/2024PhRvA.110f2205H>). doi:10.1103/PhysRevA.110.062205 (<https://doi.org/10.1103%2FPhysRevA.110.062205>).
- K. R., Sethuraj; Karmakar, Tathagata; Wadood, S. A.; Jordan, Andrew N.; Vamivakas, A. Nick (2024-08-27). "Experimental realization of supergrowing fields" (<https://doi.org/10.1103/physrevresearch.6.l032043>). *Physical Review Research*. **6** (3) L032043. doi:10.1103/physrevresearch.6.l032043 (<https://doi.org/10.1103%2Fphysrevresearch.6.l032043>). ISSN 2643-1564 (<https://search.worldcat.org/issn/2643-1564>).* Jordan, Andrew N.; Siddiqi, Irfan A. (2024). *Quantum measurement: theory and practice*. New York, NY, USA: Cambridge University Press. ISBN 978-1-009-10006-9.

- Chakraborty, Abhishek; Patti, Taylor L.; Khailany, Bruce; Jordan, Andrew N.; Anandkumar, Anima (2025). "GPU-accelerated Effective Hamiltonian Calculator". *Quantum*. **9** 1946. [arXiv:2411.09982](https://arxiv.org/abs/2411.09982) (<https://arxiv.org/abs/2411.09982>). Bibcode:2025Quant...9.1946C (<https://ui.adsabs.harvard.edu/abs/2025Quant...9.1946C>). doi:10.22331/q-2025-12-15-1946 (<https://doi.org/10.22331%2Fq-2025-12-15-1946>).

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