CONTACT INFORMATION

IST Austria
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3400 Klosterneuburg
Austria

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EDUCATION

University of Illinois at Urbana-Champaign 2005 – 2010
Ph.D. Physics
Thesis: *Applications of quantum measurement techniques*

University of Illinois at Urbana-Champaign 2003 – 2005
M.S. Physics

Hacettepe University, Turkey 1999 – 2003
B.S. Physics Engineering
Valedictorian, with highest GPA of previous 5 years

EMPLOYMENT

IST Austria (Klosterneuburg, Austria) June 2018 – present
Assistant Professor

Stanford University (Stanford, California) June 2015 – May 2018
Research Scientist

Stanford University (Stanford, California) May 2010 – June 2015
Postdoctoral Scholar

University of Illinois at Urbana-Champaign (Urbana, Illinois) Aug 2003 – May 2010
Research Assistant

Hacettepe University & Bilkent University (Ankara, Turkey) Sept 1999 – June 2003
Junior Research Assistant

AWARDS & HONORS

American Physical Society Outstanding Doctoral Thesis in AMO Physics (finalist)	2011
Karl van Bibber Postdoctoral Research Fellowship, Stanford	2010
MIT Pappalardo Postdoctoral Fellowship (offered)	2010
Ross J. Martin Award for Outstanding Research Achievement, University of Illinois	2008
Quantum Foundations Summer School Fellowship, Perimeter Institute	2007
Harry G. Drickamer Graduate Fellowship	2007
QCMC'04 Young Researchers Prize	2004
Excellence in Teaching Award, University of Illinois	2004
Valedictorian Award, Physics Engineering, Hacettepe University	2003
Ihsan Dogramaci Superior Success Award, Hacettepe University	2003
TUBITAK research grant for college students	2002

TEACHING

C_Phy-519, Quantum optics with atoms and Light *(Graduate)*	2020 - present
403 Modern Experimental Physics *(Advanced undergraduate lab)*	Spring 2007
213 Thermal Physics, 214 Waves and Quantum Physics *(Undergraduate lab)*	Fall 2004

INVITED TALKS & LECTURES	Summer school lecture, Frontiers of Matter Wave Optics 2021, "Interferometry 2.0 – Entanglement"	2021
	OSA Optical Sensors and Sensing Congress, Vancouver, Canada. "Quantum Entanglement for Inertial Sensing with Atoms in Cavities"	2021
	Seminar, Vienna University of Technology, Vienna, Austria. "Quantum entanglement for precision sensing with atoms in cavities"	2020
	Quantum optics and information meeting 4, Izmir, Turkey, "Quantum entanglement for sensing with atoms and light" *(via Zoom due to COVID)*	2020
	SPIE Photonics West OPTO, San Francisco, CA. "Laser locking to cavities with mode interference and post-selection"	2020
	Seminar, University of Innsbruck, Innsbruck, Austria. "Quantum entanglement for precision sensing with atoms in cavities"	2020
	Generation |Y> Quantum meeting, Ramsau am Dachstein, Austria. "Quantum sensing with atoms and light"	2019
	Quantum and Nonlinear Optics 2019, Kuala Lumpur, Malaysia. "Quantum entanglement for sensing with atoms and light"	2019
	Introductory Course on Ultracold Quantum Gases, Innsbruck, Austria. "Atom interferometry" *(Summer school)*	2019
	Vienna Center for Quantum Science and Technology meeting, Vienna, Austria. "Quantum entanglement for precision sensing with atoms and light"	2019
	Seminar, Vienna University of Technology, Vienna, Austria. "Quantum entanglement for precision sensing with atoms and light"	2019
	Seminar, ICFO, Barcelona, Spain. "Quantum entanglement for precision sensing with atoms and light" (2019).	2019
	SPIE Photonics West OPTO, San Francisco, CA. "Atomic spin squeezing – recent developments"	2019
	Seminar, University of Vienna, Vienna, Austria. "Quantum entanglement for precision sensing with atoms and light"	2018
	Plenary talk, 7th International Conference on New Frontiers in Physics, Crete, Greece. "Quantum metrology frontiers with cold atoms"	2018
	Seminar, University of Innsbruck, Innsbruck, Austria. "Quantum entanglement for precision sensing with atoms and light"	2018
	Seminar, Perimeter Institute, Waterloo, Canada. "Atomic spin squeezing – concepts and experiments"	2018
	SPIE Photonics West OPTO, San Francisco, CA. "Quantum phase magnification"	2018
	Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT. "Quantum phase magnification"	2018
	Special seminar, IST Austria, Vienna, Austria. "Quantum entanglement for precision sensing with atoms and light"	2017
	Special seminar, Delft University of Technology, Delft, Netherlands. "Quantum entanglement for precision sensing with atoms and light"	2017
	AMO physics seminar, University of Arizona, Tucson, AZ. "Quantum entanglement for precision sensing with atoms and light"	2017
	Special seminar, Institute for Quantum Computing, Waterloo, Canada. "Quantum entanglement for precision sensing with atoms and light"	2017

Special seminar, Columbia University, New York, NY. “Quantum entanglement for precision sensing with atoms and light”	2017
Center for Fundamental physics seminar, Northwestern University, Evanston, IL. “Quantum entanglement for precision sensing with atoms and light”	2017
AMO physics seminar, University of Wisconsin-Madison, Madison, WI. “Quantum entanglement for precision sensing with atoms and light”	2017
Special colloquium, Rochester University, Rochester, NY. “Quantum entanglement for precision sensing with atoms and light”	2017
Quantum Innovators Workshop, Institute for Quantum Computing, Waterloo, Canada. “Manipulation of quantum noise for precision measurements with cold atoms”	2016
Frontiers in Matter Wave Optics – Conference, Arcachon, France. “Manipulation of quantum noise for precision measurements with cold atoms”	2016
Bay Area Cold Atom Meeting, Stanford, CA. “Manipulation of quantum noise for precision measurements with cold atoms”	2016
DTRA Basic Research Technical Review, Springfield, VA. “Gravitational sensors based on atom interferometry”	2016
AMO physics seminar, UC San Diego, CA. “Manipulation of quantum noise for precision measurements with cold atoms”	2016
Hot topics session, APS DAMOP Meeting, Providence, RI. “Manipulation of quantum noise for precision measurements with cold atoms”	2016
International Frequency Control Symposium, New Orleans, LA. “Entanglement enhanced metrology for atom interferometry”	2016
AMO physics seminar, MIT, Boston, MA. “Quantum metrology frontiers with cold atoms”	2016
Special seminar, Columbia University, New York, NY. “Quantum metrology frontiers with cold atoms”	2016
AMO physics seminar, University of Michigan Ann Arbor, MI. “Quantum metrology frontiers with cold atoms”	2016
International Conference on Laser Spectroscopy, Singapore. “Entanglement enhanced metrology: 20dB-squeezed states for atom interferometry”	2015
Applied Physics AMO Seminar Series, Stanford University, CA. “Generation of highly squeezed quantum states of atomic ensembles for sensor applications”	2014
SPIE Photonics West OPTO, San Francisco, CA. “Cavity Aided Atomic Spin Squeezing for Quantum Enhanced Metrology”	2013
Stanford Photonics Research Center Symposium, CA. “Cavity QED Raman Lasers”	2011
APS DAMOP Meeting, Atlanta, GA. “First practical application of quantum weak measurements, used to perform the first experimental investigations of the Spin Hall Effect of Light”	2011
Ginzton Lab seminar, Stanford University, Stanford, CA. “Spin Hall effect of Light”	2009
Special seminar, Harvard University, MA. “Applications of quantum measurement techniques – ‘Counterfactual quantum computation’ and ‘Spin Hall effect of Light’ ”	2009
The Ninth Rochester Conference on Coherence and Quantum Optics (CQO9), Rochester, NY. “Observing the Spin Hall Effect of Light via quantum weak measurements”	2007
Special seminar, Osaka University, Osaka, Japan. “Counterfactuality in quantum processes”	2006
The Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird UT. “Counterfactual quantum computation”	2006

Quantum Information seminar, University of Illinois at Urbana-Champaign, IL. 2006
"Counterfactual quantum computation"

Institut für Quantenoptik und Quanteninformation (IQOQI), Vienna, Austria. 2006
"Counterfactual quantum computation"

PREPRINTS

F. Diorico, A. Zhutov, O. Hosten, "Laser-cavity locking at the 10-7 instability scale utilizing beam ellipticity", arXiv:2203.04550.

V. Li, F. Diorico, O Hosten, "Laser frequency offset locking at 10-Hz-level instability using hybrid electronic filters", arXiv:2111.13194.

PUBLICATIONS

O. Hosten, "Constraints on probing quantum coherence to infer gravitational entanglement", Phys. Rev. Research **4**, 013023 (2022).

S. S. Szigeti, O. Hosten, and S. A. Haine. "Improving cold-atom sensors with quantum entanglement: Prospects and challenges." *App. Phys. Lett.* **118**, 140501 (2021).

B. K. Malia, J. Martínez-Rincón, Y. Wu, O. Hosten & M. A. Kasevich, "Free Space Ramsey Spectroscopy in Rubidium with Noise below the Quantum Projection Limit", *Phys. Rev. Lett.* **125**, 043202 (2020).

Y. Wu, R. Krishnakumar, J. Martínez-Rincón, B. K. Malia, O. Hosten & M. A. Kasevich, "Retrieval of cavity-generated atomic spin-squeezing after free-space release", *Phys. Rev. A* **102**, 012224 (2020).

N. J. Engelsen, R. Krishnakumar, O. Hosten & M. A. Kasevich, "Bell correlations in spin-squeezed states of 500 000 atoms", *Phys. Rev. Lett.* **118**, 140401 (2017).

O. Hosten, R. Krishnakumar, N. J. Engelsen & M. A. Kasevich, "Quantum phase magnification", *Science* **352**, 1552 (2016).

O. Hosten, N. J. Engelsen, R. Krishnakumar & M. A. Kasevich, "Measurement noise 100 times lower than the quantum projection limit using entangled atoms", *Nature* **529**, 505 (2016).

J. Lee, G. Vrijsen, I. Teper, O. Hosten & M. A. Kasevich, "Many-atom–cavity QED system with homogeneous atom–cavity coupling", *Opt. Lett.* **39**, 4005 (2014).

D. Schmid, T. Y. Huang, S. Hazrat, R. Dirks, O. Hosten, S. Quint, D. Thian, P. G. Kwiat, "Adjustable and robust methods for polarization-dependent focusing", *Opt. Express* **21,** 15538 (2013).

O. Hosten, "Quantum Physics – How to catch a wave", *Nature* **474**, 170 (2011).

G. Vrijsen, O. Hosten, J. Lee, S. Bernon & M. A. Kasevich, "Raman Lasing with a Cold Atom Gain Medium in a High-Finesse Optical Cavity", *Phys. Rev. Lett.* **107**, 063904 (2011).

O. Hosten & P. G. Kwiat, "Observation of the spin Hall effect of light via Weak Measurements", *Science* **319**, 787 (2008).

O. Hosten, M. T. Rakher, J. T. Barreiro, N. A. Peters & P. G. Kwiat, "Counterfactual quantum computation through quantum interrogation", *Nature* **439**, 949 (2006).

O. Hosten & P. G. Kwiat "Weak Measurements and Counterfactual computation", *quant-ph/0612159* (2006).

O. Hosten, M. T. Rakher, J. T. Barreiro, N. A. Peters & P. G. Kwiat, "Counterfactual Computation Revisited", *quant-ph/0607101* (2006).

N. A. Peters, K. J. Arnold, A. P. VanDevender, E. R. Jeffrey, R. Rangarajan, O. Hosten, J. T. Barreiro, J. B. Altepeter & P. G. Kwiat, "Towards a quasi-deterministic single-photon source", *Proc. SPIE.* **6305**, 630507 (2006).

R. Rangarajan, J. B. Altepeter, E. R. Jeffrey, M. J. A.. Stoutimore, N. A. Peters, O. Hosten & P. G. Kwiat, "High-efficiency single-photon detectors", *Proc. SPIE* **6372**, 63720T (2006).

O. Hosten, P. Vignolo, A. Minguzzi, B. Tanatar & M. P. Tosi, "Free Expansion of Two-Dimensional Condensates with a Vortex", *J. Phys. B* **36**, 2455 (2003).

PATENTS

F. Diorico, O. Hosten, “????” (2022).

PROFESSIONAL SERVICE

Peer review

Journals: Nature, Physical Review Letters, Physical Review A, Optics Letters, New Journal of Physics, IEEE Aerospace & Electronics Systems Magazine.

Committees at IST Austria

Faculty search committee, Summer internships committee, Student mentorship committee, Colloquium committee, Interdisciplinary projects committee, Thesis and qualification exam committees.

External Committees:

Thesis and qualifications committees: ICFO Barcelona, University of Vienna.

External PhD Mentorship: University of Vienna.

Exploratory professorship search committee, TU Vienna.

Vienna Center for Quantum Science: Awards committee.