Srujan Meesala

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Google Scholar page

POSITIONS

Senior Applied Scientist — April 1st, 2025 - present

Quantum Research Scientist — July 1st, 2025 - March 31st, 2025
Amazon Web Services (AWS) Center for Quantum Computing

Assistant Professor of Electrical and Computer Engineering — July 1st, 2024 - June 30th, 2025
Rice University

Postdoctoral scholar — Sep 1st, 2019 - Jun 30th, 2024
California Institute of Technology (Advisor: Oskar Painter)

Postdoctoral scholar — July 16th, 2019 - Aug 31st, 2019
Harvard University (Advisor: Marko Lončar)

Graduate research assistant — Sep 1st, 2012 - May 30th, 2019
Harvard University (Advisor: Marko Lončar)

EDUCATION

Ph. D. in Applied Physics, Harvard University — Sep 2012 - May 2019
Thesis: "Quantum acoustics with diamond color centers"
Advisor: Marko Lončar, Tiantsai Lin Professor of Electrical Engineering and Applied Physics

B. Tech. in Electrical Engineering (major), Computer Science (minor), — July 2008 - Aug 2012
Indian Institute of Technology (IIT) Bombay

AWARDS

Boeing Quantum Creators Prize, Chicago Quantum Exchange at the University of Chicago	2023
Institute for Quantum Information and Matter (IQIM) Postdoctoral Scholarship, Caltech	2020
Congressi Stefano Franscini Award for Young Scientists, ETH Zürich, Switzerland	2017
Prof. K. C. Mukherji Award for Best Bachelor's Thesis in Electrical Engineering, IIT Bombay	2012
Silver medal, International Chemistry Olympiad (IChO), Budapest, Hungary	2008

PUBLICATIONS

List as of April 7th, 2026 is at the end of CV. Up-to-date list is available on my Google Scholar page [link].

INVITED TALKS

APS Joint March and April Meeting, Anaheim CA	Mar 2025
SPIE Photonics West, San Francisco CA	Jan 2025
Workshop on Functional Quantum Defects, Rice University	Nov 2024
Center for Complex Quantum Systems, UT Austin	Oct 2024
Frontiers in Optics and Laser Science (FiO-LS), Denver CO	Sep 2024
Single Photon Emitters and Spin-Based Quantum Sensors Workshop, Oak Ridge National Laboratory	Aug 2024
EIPBN (3-Beams) 2024, La Jolla CA	May 2024
ECE Electrophysics Seminar, University of Southern California, Los Angeles CA	Mar 2024
Condensed Matter Experiment Seminar, Boston University, Boston MA	Feb 2024
Rice Quantum Initiative Seminar, Rice University, Houston TX	Feb 2024

JILA Fellow Candidate Colloquium, JILA, Boulder CO	Jan 2024
ECE Quantum Science & Technology Seminar, University of Southern California, Los Angeles CA	Nov 2023
Boeing Quantum Creators Prize Symposium, Chicago Quantum Summit	Nov 2023
Laboratory for Nanoscale Optics, Harvard University	July 2023
Quantum Devices Group, UC Berkeley	July 2023
AWS Center for Quantum Networks Tech Talk, Boston MA	Mar 2023
Institute for Quantum Information and Matter (IQIM) Seminar, Caltech	Dec 2019
Quantum Photonics Group, Caltech	Apr 2019
Quantum Nanoelectronics Group, UC Berkeley	Mar 2019
Hanson Lab, QuTech, TU Delft, Netherlands	Aug 2017
NSF Center for Integrated Quantum Materials (CIQM) BACON+ Seminar, Washington DC	Nov 2016
Harvard-MIT Diamond Seminar, Cambridge MA	Oct 2016
Department of Electrical Engineering, Indian Institute of Technology (IIT) Bombay	Aug 2016
Department of Condensed Matter Physics & Materials Science, Tata Institute of Fundamental Research (TIFR), Mumbai	Aug 2016

CONFERENCE TALKS

• S Meesala, D Lake, S Wood, P Chiappina, A Beyer, M Shaw, O Painter, "A chip-scale source of entangled microwave and optical photonic qubits", APS March Meeting 2024, Minneapolis MN

• S Meesala, D Lake, S Wood, P Chiappina, A Beyer, M Shaw, O Painter, "A chip-scale microwave-optical photon-pair source", AWS Quantum Networks (QuNEW) Workshop 2023, Beverly MA

• S Meesala, D Lake, S Wood, P Chiappina, A Beyer, M Shaw, O Painter, "Microwave-optical photon correlations in a piezo-optomechanical quantum transducer", APS March Meeting 2023, Las Vegas NV

• S Meesala, S Wood, D Lake, P Chiappina, A Beyer, M Shaw, O Painter, "High impedance NbN resonators for piezo-optomechanical microwave to optical quantum transducers", APS March Meeting 2022, Chicago IL

• S Meesala, J Banker, S Wood, A Sipahigil, D Lake, P Chiappina, A Beyer, M Shaw, O Painter, "Effects of laser illumination on superconducting circuits for quantum transduction", CLEO 2021

• S Meesala, M Burek, C Chia, N El-Sawah, Y-I Sohn, M-A Lemonde, M Lukin, P Rabl, M Lončar, "Towards a coherent spin-phonon interface in diamond", APS March Meeting 2018, Los Angeles CA

• S Meesala, Y-I Sohn, B Pingault, H Atikian, J Holzgrafe, M Gundogan, C Stavrakas, A Sipahigil, M Burek, M Zhang, J Pacheco, J Abraham, E Bielejec, M Lukin, M Atature, M Lončar, "Strain engineering of silicon vacancy centers with diamond MEMS", APS March Meeting 2017, New Orleans LA

• S Meesala, Y-I Sohn, H Atikian, J Holzgrafe, M Zhang, M Burek, M Lončar, "Strain engineering of silicon vacancy centers with diamond MEMS", APS DAMOP Meeting 2016, Providence RI

• S Meesala, Y-I Sohn, H A Atikian, M J Burek, S Kim, J Choy, M Lončar, "Strain coupling of diamond nitrogen vacancy centers to nanomechanical resonators", CLEO 2015, San Jose CA

TEACHING

Quantum Electrical and Optical Circuits (ELEC 677), Fall 2024, Rice University

PROFESSIONAL ACTIVITIES

Referee for *Physical Review X, Physical Review Letters, Physical Review Applied, Science, Science Advances, Optics Letters.*

SCIENCE OUTREACH

Developed a three minute public talk [link] accessible to schoolchildren on quantum computing. The talk was awarded first place in an NSF Science and Technology center (CIQM) sponsored science communication event [link] at the Museum of Science, Boston.

List of Publications

MAJOR CONTRIBUTIONS

1. "Quantum entanglement between optical and microwave photonic qubits"
S Meesala*, D Lake*, S Wood*, P Chiappina, C Zhong, A D Beyer, M D Shaw, L Jiang, O Painter
Phys. Rev. X **14**, 031055 (2024)

2. "Non-classical microwave-optical photon pair generation with a chip-scale transducer"
S Meesala*, S Wood*, D Lake*, P Chiappina, C Zhong, A D Beyer, M D Shaw, L Jiang, O Painter
Nature Physics (2024)
Featured on journal cover.

3. "Quantum interference of electromechanically stabilized emitters in nanophotonic devices"
B J Machielse*, S Bogdanovic*, **S Meesala***, S Gauthier, M J Burek, G Joe, M Chalupnik, Y-I Sohn, J Holzgrafe, R E Evans, C Chia, M K Bhaskar, D Sukachev, L Shao, S Maity, M D Lukin, M Lončar
Phys. Rev. X **9**, 031022 (2019)
Featured in focus story in APS *Physics* magazine.

4. "Controlling the coherence of a diamond spin qubit through its strain environment"
Y-I Sohn*, **S Meesala***, B Pingault*, H A Atikian, J Holzgrafe, M Gundogan, C Stavrakas, M J Stanley, A Sipahigil, J Choi, M Zhang, J L Pacheco, J Abraham, E Bielejec, M D Lukin, M Atature, M Lončar
Nature Communications **9**, 2012 (2018)
Featured among 50 most read physics articles of the year; see popular science article in Ars Technica.

5. "Strain engineering of the silicon vacancy center in diamond"
S Meesala*, Y-I Sohn*, B Pingault, L Shao, H A Atikian, J Holzgrafe, M Gundogan, C Stavrakas, A Sipahigil, C Chia, M J Burek, M Zhang, J L Pacheco, J Abraham, E Bielejec, M D Lukin, M Atature, M Lončar
Phys. Rev. B **97**, 205444 (2018); editor's suggestion

6. "Phonon networks with SiV centers in diamond"
M-A Lemonde, **S Meesala**, A Sipahigil, M J A Schuetz, M D Lukin, M Lončar, P Rabl
Phys. Rev. Lett. **120**, 213603 (2018); editor's suggestion

PUBLICATIONS

7. "Observation of the acoustic Purcell effect with a color-center and a nanomechanical resonator"
G Joe, M Haas, K Kuruma, C Jin, D D Kang, S Ding, C Chia, H Warner, B Pingault, B Machielse, **S Meesala**, M Loncar
preprint: arXiv:2503.09446 (2025)

8. "High-Efficiency Low-Noise Optomechanical Crystal Photon-Phonon Transducers"
S Sonar, U Hatipoglu, **S Meesala**, D P Lake, O Painter
Optica **12**, 1 (2025)

9. "Microwave-Optical Entanglement from Pulse-pumped Electro-optomechanics"
C Zhong, F Li, **S Meesala**, S Wood, D Lake, O Painter, L Jiang
Phys. Rev. Appl. **22**, 064047 (2024)

10. "Acceptor-induced bulk dielectric loss in superconducting circuits on silicon"
Z-H Zhang, K Godeneli, J He, M Odeh, H Zhou, **S Meesala**, A Sipahigil
*Phys. Rev. X***14**, 041022 (2024)

11. "High Q-factor diamond optomechanical resonators with silicon vacancy centers at millikelvin temperatures"
G D Joe, C Chia, B Pingault, M Haas, M Chalupnik, E Cornell, K Kuruma, B Machielse, N Sinclair, **S Meesala**, M Lončar
Nano Letters **23**, 24 (2024)

* denotes equal contribution

12. "In-situ tuning of optomechanical crystals with nano-oxidation"
U Hatipoglu, S Sonar, D P Lake, **S Meesala**, O Painter
Optica **11**, 3 (2023)

13. "Design of an ultra-low mode volume piezo-optomechanical quantum transducer"
P Chiappina, J Banker, **S Meesala**, D Lake, S Wood, O Painter
Optics Express **31**, 14 (2023)

14. "Diamond mirrors for high-power continuous-wave lasers"
H A Atikian, N Sinclair, P Latawiec, X Xiong, **S Meesala**, S Gauthier, D Wintz, J Randi, D Bernot, S DeFrances, J Thomas, M Roman, S Durrant, F Capasso, M Lončar
Nature Communications **13**, 2610 (2022)

15. "Magnetic Field Fingerprinting of Integrated-Circuit Activity with a Quantum Diamond Microscope"
M J Turner, N Langellier, R Bainbridge, D Walters, **S Meesala**, T M Babinec, P Kehayias, A Yacoby, Evelyn Hu, Marko Lončar, Ronald L. Walsworth, and Edlyn V. Levine
Phys. Rev. Appl. **14**, 041097 (2020)

16. "Coherent acoustic control of a single silicon vacancy spin in diamond"
S Maity, L Shao, S Bogdanović, **S Meesala**, Y-I Sohn, N Sinclair, B Pingault, M Chalupnik, C Chia, L Zheng, K Lai, M Lončar
Nature Communications **11**, 193 (2020)

17. "Spectral Alignment of Single-Photon Emitters in Diamond using Strain Gradient"
S Maity, L Shao, Y-I Sohn, **S Meesala**, B Machielse, E Bielejec, M Markham, and M Lončar
Phys. Rev. Appl. **10**, 024050 (2018)

18. "Fiber-Coupled Diamond Quantum Nanophotonic Interface"
M J Burek, C Meuwly, R E Evans, M K Bhaskar, A Sipahigil, **S Meesala**, B Machielse, D D Sukachev, C T Nguyen, J L Pacheco, E Bielejec, M D Lukin, and M Lončar
Phys. Rev. Appl. **8**, 024026 (2017); editor's suggestion

19. "Freestanding nanostructures via reactive ion beam angled etching"
H A Atikian, P Latawiec, M J Burek, Y-I Sohn, **S Meesala**, N Gravel, A B Kouki, M Lončar
APL Photonics **2**, 051301 (2017); editor's pick

20. "Enhanced strain coupling of nitrogen-vacancy spins to nanoscale diamond cantilevers"
S Meesala*, Y-I Sohn*, H A Atikian, S Kim, M J Burek, J T Choy, M Lončar
Phys. Rev. Appl. **5**, 3 (2016)

21. "Diamond optomechanical crystals"
M J Burek, J D Cohen, S M Meenehan, N El-Sawah, C Chia, T Ruelle, **S Meesala**, J Rochman, H A Atikian, M Markham, D J Twitchen, M D Lukin, O Painter, and M Lončar
Optica **3**, 1404 (2016)

22. "High quality-factor optical nanocavities in bulk single-crystal diamond"
M J Burek, Y Chu, M SZ Liddy, P Patel, J Rochman, **S Meesala**, W Hong, Q Quan, M D Lukin, M Lončar
Nature Communications **5**, 5718 (2014)

23. "Efficient, Uniform, and Large Area Microwave Magnetic Coupling to NV Centers in Diamond Using Double Split-Ring Resonators"
K Bayat, J Choy, M F Baroughi, **S Meesala**, M Loncar
Nano Lett. **14**, 1208 (2014)

20. "A multicolor, broadband (5–20μm), quaternary-capped InAs/GaAs quantum dot infrared photodetector"
S Adhikary, Y Aytac, **S Meesala**, S Wolde, AG Unil Perera, S Chakrabarti
Appl. Phys. Lett. **101**, 26114 (2012)

21. "Effects of contact space charge on the performance of quantum intersubband photodetectors"
A V Barve, **S Meesala**, S Sengupta, J O Kim, S Chakrabarti, S Krishna
Appl. Phys. Lett. **100**, 191107 (2012)

22. "High temperature operation of quantum dots-in-a-well infrared photodetectors"
A V Barve, J Montaya, Y Sharma, T Rotter, J Shao, W-Y Jang, **S Meesala**, S J Lee, S Krishna
Infrared Physics and Technology **54**, 215 (2011)

23. "Presentation and experimental validation of a model for the effect of thermal annealing on the photoluminescence of self-assembled InAs/GaAs quantum dots"
M Srujan, K Ghosh, S Sengupta, S Chakrabarti
J. Appl. Phys. **107**, 123107 (2010)