

Stanford



Amir Safavi-Naeini

Associate Professor of Applied Physics and, by courtesy, of Electrical Engineering

Bio

ACADEMIC APPOINTMENTS

- Associate Professor, Applied Physics
- Associate Professor (By courtesy), Electrical Engineering

PROFESSIONAL EDUCATION

- Ph.D., California Institute of Technology , Applied Physics (2013)
- B.ASc., University of Waterloo , Electrical Engineering (2008)

PATENTS

- Jeremy D Witmer, Patricio Arrangoiz-Arriola, Jeff T Hill, Amir H Safavi-Naeini, Timothy Patrick McKenna. "United States Patent US20180113373A1 Doubly-resonant electro-optic conversion using a superconducting microwave resonator", Leland Stanford Junior University, Oct 23, 2017
- Oskar Painter, Martin WINGER, Qiang Lin, Amir SAFAVI-NAEINI, Thiago ALEGRE, Timothy Dobson BLASIUS, Alexander Grey KRAUSE. "United States Patent US20130121633 A1 Systems and methods for tuning a cavity", California Institute Of Technology, Nov 11, 2011

LINKS

- Lab Site: <https://web.stanford.edu/~safavi/>

Teaching

COURSES

2023-24

- Atoms, Fields and Photons: APPPHYS 203 (Aut)
- Quantum Hardware: APPPHYS 228 (Win)

2022-23

- Atoms, Fields and Photons: APPPHYS 203 (Aut)
- Quantum Hardware: APPPHYS 228 (Win)

2021-22

- Atoms, Fields and Photons: APPPHYS 203 (Aut)
- Quantum Hardware: APPPHYS 228 (Win)

2020-21

- Atoms, Fields and Photons: APPPHYS 203 (Aut)
- Quantum Hardware: APPPHYS 228 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Sahil Dagli, Beicheng Lou, Sattwik Deb Mishra, Tiffany Paul, Michelle Wu, Joshua Yang, Cady van Assendelft

Postdoctoral Faculty Sponsor

Samuel Gyger, Ali Khalatpour, Hubert Stokowski

Doctoral Dissertation Advisor (AC)

Nancy Ammar, Oguz Tolga Celik, Rachel Gruenke, Jason Herrmann, Oliver Hitchcock, Alex Hwang, Takuma Makihara, Sultan Malik, Felix Mayor, Kevin Multani, Taewon Park, Taha Rajabzadeh

Doctoral (Program)

Jason Herrmann, Vasily Kruzhilin, Sze Cheung Lau, Kejun Xu

Publications

PUBLICATIONS

- **Surface modification and coherence in lithium niobate SAW resonators.** *Scientific reports*

Gruenke, R. G., Hitchcock, O. A., Wollack, E. A., Sarabalis, C. J., Jankowski, M., McKenna, T. P., Lee, N. R., Safavi-Naeini, A. H. 2024; 14 (1): 6663

- **Single-mode squeezed-light generation and tomography with an integrated optical parametric oscillator.** *Science advances*

Park, T., Stokowski, H., Ansari, V., Gyger, S., Multani, K. K., Celik, O. T., Hwang, A. Y., Dean, D. J., Mayor, F., McKenna, T. P., Fejer, M. M., Safavi-Naeini, A. 2024; 10 (11): eadl1814

- **Integrated frequency-modulated optical parametric oscillator.** *Nature*

Stokowski, H. S., Dean, D. J., Hwang, A. Y., Park, T., Celik, O. T., McKenna, T. P., Jankowski, M., Langrock, C., Ansari, V., Fejer, M. M., Safavi-Naeini, A. H. 2024; 627 (8002): 95-100

- **Arbitrary electro-optic bandwidth and frequency control in lithium niobate optical resonators.** *Optics express*

Herrmann, J. F., Dean, D. J., Sarabalis, C. J., Ansari, V., Multani, K., Wollack, E. A., McKenna, T. P., Witmer, J. D., Safavi-Naeini, A. H. 2024; 32 (4): 6168-6177

- **Strong Dispersive Coupling Between a Mechanical Resonator and a Fluxonium Superconducting Qubit** *PRX QUANTUM*

Lee, N. A., Guo, Y., Cleland, A. Y., Wollack, E., Gruenke, R. G., Makihara, T., Wang, Z., Rajabzadeh, T., Jiang, W., Mayor, F. M., Arrangoiz-Arriola, P., Sarabalis, C. J., Safavi-Naeini, et al 2023; 4 (4)

- **Efficient Photonic Integration of Diamond Color Centers and Thin-Film Lithium Niobate** *ACS PHOTONICS*

Riedel, D., Lee, H., Herrmann, J. F., Grzesik, J., Ansari, V., Borit, J., Stokowski, H. S., Aghaeimeibodi, S., Lu, H., McQuade, P. J., Melosh, N. A., Shen, Z., Safavi-Naeini, et al 2023; 10 (12): 4236-4243

- **Mid-infrared spectroscopy with a broadly tunable thin-film lithium niobate optical parametric oscillator** *OPTICA*

Hwang, A., Stokowski, H. S., Park, T., Jankowski, M., McKenna, T. P., Langrock, C., Mishra, J., Ansari, V., Fejer, M. M., Safavi-Naeini, A. H. 2023; 10 (11): 1535-1542

- **Analysis of arbitrary superconducting quantum circuits accompanied by a Python package: SQcircuit** *QUANTUM*

Rajabzadeh, T., Wang, Z., Lee, N., Makihara, T., Guo, Y., Safavi-Naeini, A. H. 2023; 7

- **Flexible integration of gigahertz nanomechanical resonators with a superconducting microwave resonator using a bonded flip-chip method** *APPLIED PHYSICS LETTERS*

Malik, S., Jiang, W., Mayor, F. M., Makihara, T., Safavi-Naeini, A. H. 2023; 123 (10)

- **Identifying the Microscopic Nature of Two Level System Loss Channels in Acoustic Devices Using X-ray Photoelectron Spectroscopy and Atomic Force Microscopy.** *Microscopy and microanalysis : the official journal of Microscopy Society of America, Microbeam Analysis Society, Microscopical Society of Canada* Gruenke, R., Multani, G., Hitchcock, O., Wollack, E. A., Szakiel, E., Sarabalis, C., Lee, N., Cleland, A., Safavi-Naeini, A. 2023; 29 (Supplement_1): 776
- **Optically heralded microwave photon addition** *NATURE PHYSICS* Jiang, W., Mayor, F. M., Malik, S., Van Laer, R., McKenna, T. P., Patel, R. N., Witmer, J. D., Safavi-Naeini, A. H. 2023
- **Integrated quantum optical phase sensor in thin film lithium niobate.** *Nature communications* Stokowski, H. S., McKenna, T. P., Park, T., Hwang, A. Y., Dean, D. J., Celik, O. T., Ansari, V., Fejer, M. M., Safavi-Naeini, A. H. 2023; 14 (1): 3355
- **Platform-agnostic waveguide integration of high-speed photodetectors with evaporated tellurium thin films** *OPTICA* Ahn, G., White, A. D., Kim, H., Higashitaramizu, N., Mayor, F. M., Herrmann, J. F., Jiang, W., Multani, K. S., Safavi-Naeini, A. H., Javey, A., Vuckovic, J. 2023; 10 (3): 349-355
- **Bias-stable Sub-Volt Visible Electro-optic Modulator in Thin-Film Lithium Niobate** Celik, O., Ammar, N., Stokowski, H. S., Park, T., Safavi-Naeini, A., IEEE IEEE.2023
- **Tunable dual wavelength laser on thin film lithium niobate** Lufungula, I., Mayor, F. M., Herrmann, J. F., Park, T., Stokowski, H. S., Hwang, A. Y., De Beeck, C., Atalar, O., Jiang, W., Kuyken, B., Safavi-Naeini, A. H., IEEE IEEE.2023
- **Y-Z cut lithium niobate longitudinal piezoelectric resonant photoelastic modulator** *OPTICS EXPRESS* Atalar, O., Yee, S., Safavi-Naeini, A., Arbabian, A. 2022; 30 (26): 47103-47114
- **Integrated passive nonlinear optical isolators** *NATURE PHOTONICS* White, A. D., Ahn, G., Gasse, K., Yang, K., Chang, L., Bowers, J. E., Vuckovic, J. 2022
- **Ultra-broadband mid-infrared generation in dispersion-engineered thin-film lithium niobate** *OPTICS EXPRESS* Mishra, J., Jankowski, M., Hwang, A. Y., Stokowski, H. S., McKenna, T. P., Langrock, C., Ng, E., Heydari, D., Mabuchi, H., Safavi-Naeini, A. H., Fejer, M. M. 2022; 30 (18): 32752-32760
- **Ultra-low-power second-order nonlinear optics on a chip.** *Nature communications* McKenna, T. P., Stokowski, H. S., Ansari, V., Mishra, J., Jankowski, M., Sarabalis, C. J., Herrmann, J. F., Langrock, C., Fejer, M. M., Safavi-Naeini, A. H. 2022; 13 (1): 4532
- **Mirror symmetric on-chip frequency circulation of light** *NATURE PHOTONICS* Herrmann, J. F., Ansari, V., Wang, J., Witmer, J. D., Fan, S., Safavi-Naeini, A. H. 2022
- **High-bandwidth CMOS-voltage-level electro-optic modulation of 780 nm light in thin-film lithium niobate** *OPTICS EXPRESS* Celik, O., Sarabalis, C. J., Mayor, F. M., Stokowski, H. S., Herrmann, J. F., McKenna, T. P., Lee, N. A., Jiang, W., Multani, K. S., Safavi-Naeini, A. H. 2022; 30 (13): 23177-23186
- **High-efficiency second harmonic generation of blue light on thin-film lithium niobate.** *Optics letters* Park, T., Stokowski, H. S., Ansari, V., McKenna, T. P., Hwang, A. Y., Fejer, M. M., Safavi-Naeini, A. H. 2022; 47 (11): 2706-2709
- **Automated Discovery of Autonomous Quantum Error Correction Schemes** *PRX QUANTUM* Wang, Z., Rajabzadeh, T., Lee, N., Safavi-Naeini, A. H. 2022; 3 (2)
- **Quantum state preparation and tomography of entangled mechanical resonators.** *Nature* Wollack, E. A., Cleland, A. Y., Gruenke, R. G., Wang, Z., Arrangoiz-Arriola, P., Safavi-Naeini, A. H.

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● **Longitudinal piezoelectric resonant photoelastic modulator for efficient intensity modulation at megahertz frequencies.** *Nature communications*

Atalar, O., Van Laer, R., Safavi-Naeini, A. H., Arbabi, A.

2022; 13 (1): 1526

● **Building a Fault-Tolerant Quantum Computer Using Concatenated Cat Codes** *PRX QUANTUM*

Chamberland, C., Noh, K., Arrangoiz-Arriola, P., Campbell, E. T., Hann, C. T., Iverson, J., Puterman, H., Bohdanowicz, T. C., Flammia, S. T., Keller, A., Refael, G., Preskill, J., Jiang, et al

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● **2022 Roadmap on integrated quantum photonics** *JOURNAL OF PHYSICS-PHOTONICS*

Moody, G., Sorger, V. J., Blumenthal, D. J., Juodawlkis, P. W., Loh, W., Sorace-Agaskar, C., Jones, A. E., Balram, K. C., Matthews, J. F., Laing, A., Davanco, M., Chang, L., Bowers, et al

2022; 4 (1)

● **Superconducting on-chip tunable mm-wave resonator**

Das, D., Naji, A., Multani, K. S., Safavi-Naeini, A. H., Nanni, E. A., IEEE
IEEE.2022

● **III/V-on-lithium niobate amplifiers and lasers** *OPTICA*

de Beeck, C., Mayor, F. M., Cuyvers, S., Poelman, S., Herrmann, J. F., Atalar, O., McKenna, T. P., Haq, B., Jiang, W., Witmer, J. D., Roelkens, G., Safavi-Naeini, A. H., Van Laer, et al

2021; 8 (10): 1288-1289

● **Control Design for Inhomogeneous-Broadening Compensation in Single-Photon** *PHYSICAL REVIEW APPLIED*

Mishra, S., Trivedi, R., Safavi-Naeini, A. H., Vuckovic, J.
2021; 16 (4)

● **Mid-infrared nonlinear optics in thin-film lithium niobate on sapphire** *OPTICA*

Mishra, J., McKenna, T. P., Ng, E., Stokowski, H. S., Jankowski, M., Langrock, C., Heydari, D., Mabuchi, H., Fejer, M. M., Safavi-Naeini, A. H.
2021; 8 (6): 921-924

● **Number Partitioning With Grover's Algorithm in Central Spin Systems** *PRX QUANTUM*

Anikeeva, G., Markovic, O., Borish, V., Hines, J. A., Rajagopal, S., Cooper, E. S., Periwal, A., Safavi-Naeini, A., Davis, E. J., Schleier-Smith, M.
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● **Acousto-optic modulation of a wavelength-scale waveguide** *OPTICA*

Sarabalis, C. J., Van Laer, R., Patel, R. N., Dahmani, Y. D., Jiang, W., Mayor, F. M., Safavi-Naeini, A. H.
2021; 8 (4): 477-483

● **Loss channels affecting lithium niobate phononic crystal resonators at cryogenic temperature** *APPLIED PHYSICS LETTERS*

Wollack, E., Cleland, A. Y., Arrangoiz-Arriola, P., McKenna, T. P., Gruenke, R. G., Patel, R. N., Jiang, W., Sarabalis, C. J., Safavi-Naeini, A. H.
2021; 118 (12)

● **Development of Quantum Interconnects (QuICs) for Next-Generation Information Technologies** *PRX QUANTUM*

Awschalom, D., Berggren, K. K., Bernien, H., Bhave, S., Carr, L. D., Davids, P., Economou, S. E., Englund, D., Faraon, A., Fejer, M., Guha, S., Gustafsson, M., Hu, et al
2021; 2 (1)

● **Gigahertz Phononic Integrated Circuits on Thin-Film Lithium Niobate on Sapphire** *PHYSICAL REVIEW APPLIED*

Mayor, F. M., Jiang, W., Sarabalis, C. J., McKenna, T. P., Witmer, J. D., Safavi-Naeini, A. H.
2021; 15 (1)

● **Fully-Resonant Second Harmonic Generation in Periodically Poled Thin-Film Lithium Niobate**

McKenna, T. P., Stokowski, H. S., Ansari, V., Mishra, J., Jankowski, M., Sarabalis, C. J., Herrmann, J. F., Langrock, C., Fejer, M. M., Safavi-Naeini, A. H., IEEE
IEEE.2021

● **Room-Temperature Mechanical Resonator with a Single Added or Subtracted Phonon.** *Physical review letters*

Patel, R. N., McKenna, T. P., Wang, Z., Witmer, J. D., Jiang, W., Van Laer, R., Sarabalis, C. J., Safavi-Naeini, A. H.
2021; 127 (13): 133602

- **Photonic Modal Circulator Using Temporal Refractive-Index Modulation with Spatial Inversion Symmetry.** *Physical review letters*
Wang, J., Herrmann, J. F., Witmer, J. D., Safavi-Naeini, A. H., Fan, S.
2021; 126 (19): 193901
- **Quantum Control of Microwave-to-Optical Transducers for Inhomogeneous Broadening Compensation**
Mishra, S., Trivedi, R., Safavi-Naeini, A. H., Vuckovic, J., IEEE
IEEE.2021
- **Integrated thin-film lithium niobate non-reciprocal circulator**
Herrmann, J. F., Ansari, V., Wang, J., Witmer, J. D., Fan, S., Safavi-Naeini, A. H., IEEE
IEEE.2021
- **Photonic modal circulator using dynamic modulation with mirror symmetry**
Wang, J., Herrmann, J., Witmer, J., Safavi-Naeini, A. H., Fan, S., IEEE
IEEE.2021
- **Mid-infrared nonlinear optics in thin-film lithium niobate on sapphire**
Mishra, J., McKenna, T. P., Ng, E., Stokowski, H. S., Jankowski, M., Langrock, C., Heydari, D., Mabuchi, H., Safavi-Naeini, A. H., Fejer, M. M., IEEE
IEEE.2021
- **Optical Parametric Oscillator in Thin-Film Lithium Niobate with a 130 μW Threshold**
Stokowski, H. S., McKenna, T. P., Ansari, V., Mishra, J., Jankowski, M., Sarabalis, C. J., Herrmann, J. F., Langrock, C., Fejer, M. M., Safavi-Naeini, A. H., IEEE
IEEE.2021
- **Cryogenic microwave-to-optical conversion using a triply resonant lithium-niobate-on-sapphire transducer** *OPTICA*
McKenna, T. P., Witmer, J. D., Patel, R. N., Jiang, W., Van Laer, R., Arrangoiz-Arriola, P., Wollack, E., Herrmann, J. F., Safavi-Naeini, A. H.
2020; 7 (12): 1737–45
- **Nanobenders as efficient piezoelectric actuators for widely tunable nanophotonics at CMOS-level voltages** *COMMUNICATIONS PHYSICS*
Jiang, W., Mayor, F. M., Patel, R. N., McKenna, T. P., Sarabalis, C. J., Safavi-Naeini, A. H.
2020; 3 (1)
- **Acousto-optic modulation in lithium niobate on sapphire** *APL PHOTONICS*
Sarabalis, C. J., McKenna, T. P., Patel, R. N., Van Laer, R., Safavi-Naeini, A. H.
2020; 5 (8)
- **A silicon-organic hybrid platform for quantum microwave-to-optical transduction** *QUANTUM SCIENCE AND TECHNOLOGY*
Witmer, J. D., McKenna, T. P., Arrangoiz-Arriola, P., Van Laer, R., Alex Wollack, E., Lin, F., Jen, A., Luo, J., Safavi-Naeini, A. H.
2020; 5 (3)
- **Piezoelectric Transduction of a Wavelength-Scale Mechanical Waveguide** *PHYSICAL REVIEW APPLIED*
Dahmani, Y. D., Sarabalis, C. J., Jiang, W., Mayor, F. M., Safavi-Naeini, A. H.
2020; 13 (2)
- **Time-of-flight imaging based on resonant photoelastic modulation (vol 58, pg 2235, 2019)** *APPLIED OPTICS*
Atalar, O., Van Laer, R., Sarabalis, C. J., Safavi-Naeini, A. H., Arbabian, A.
2020; 59 (5): 1430
- **S-band delay lines in suspended lithium niobate** *JOURNAL OF APPLIED PHYSICS*
Sarabalis, C. J., Dahmani, Y. D., Cleland, A. Y., Safavi-Naeini, A. H.
2020; 127 (5)
- **Lithium Niobate Resonant Photoelastic Modulator for Time-of-Flight Imaging**
Atalar, O., Van Laer, R., Sarabalis, C. J., Safavi-Naeini, A. H., Arbabian, A., IEEE
IEEE.2020
- **Development of a Millimeter-Wave Transducer for Quantum Networks**
Multani, K. S., Stokowski, H., Snively, E., Patel, R., Jiang, W., Lee, N., Welander, P. B., Nanni, E. A., Safavi-Naeini, A. H., IEEE
IEEE.2020

- **Efficient bidirectional piezo-optomechanical transduction between microwave and optical frequency.** *Nature communications*
Jiang, W. n., Sarabalis, C. J., Dahmani, Y. D., Patel, R. N., Mayor, F. M., McKenna, T. P., Van Laer, R. n., Safavi-Naeini, A. H.
2020; 11 (1): 1166
- **Photonics-to-Free-Space Interface in Lithium Niobate-on-Sapphire**
Rajabzadeh, T., Sarabalis, C. J., Atalar, O., Safavi-Naeini, A. H., IEEE
IEEE.2020
- **Acousto-Optics in Lithium Niobate-on-Sapphire**
Sarabalis, C. J., McKenna, T. P., Patel, R. N., Safavi-Naeini, A. H., IEEE
IEEE.2020
- **Efficient bidirectional piezo-optomechanical transduction between microwave and optical frequency**
Jiang, W., Sarabalis, C. J., Dahmani, Y. D., Patel, R. N., Mayor, F. M., McKenna, T. P., Van Laer, R., Safavi-Naeini, A. H., IEEE
IEEE.2020
- **Nanobenders: efficient piezoelectric actuators for widely tunable nanophotonics at CMOS-level voltages**
Jiang, W., Mayor, F. M., Patel, R. N., McKenna, T. P., Sarabalis, C. J., Safavi-Naeini, A. H., IEEE
IEEE.2020
- **Piezo-optomechanics in lithium niobate on silicon-on-insulator for microwave-to-optics transduction**
Van Laer, R., Jiang, W., Patel, R. N., Sarabalis, C. J., Cleland, A., McKenna, T. P., Wollack, E., Witmer, J. D., Safavi-Naeini, A. H., IEEE
IEEE.2020
- **Mechanical Purcell filters for microwave quantum machines** *APPLIED PHYSICS LETTERS*
Cleland, A. Y., Pechal, M., Stas, P. C., Sarabalis, C. J., Wollack, E., Safavi-Naeini, A. H.
2019; 115 (26)
- **Cryogenic packaging of an optomechanical crystal** *OPTICS EXPRESS*
McKenna, T. P., Patel, R. N., Witmer, J. D., Van Laer, R., Valery, J. A., Safavi-Naeini, A. H.
2019; 27 (20): 28782–91
- **Lithium niobate piezo-optomechanical crystals** *OPTICA*
Jiang, W., Patel, R. N., Mayor, F. M., McKenna, T. P., Arrangoiz-Arriola, P., Sarabalis, C. J., Witmer, J. D., Van Laer, R., Safavi-Naeini, A. H.
2019; 6 (7): 845–53
- **Resolving the energy levels of a nanomechanical oscillator.** *Nature*
Arrangoiz-Arriola, P., Wollack, E. A., Wang, Z., Pechal, M., Jiang, W., McKenna, T. P., Witmer, J. D., Van Laer, R., Safavi-Naeini, A. H.
2019; 571 (7766): 537–40
- **Quantum Dynamics of a Few-Photon Parametric Oscillator** *PHYSICAL REVIEW X*
Wang, Z., Pechal, M., Wollack, E., Arrangoiz-Arriola, P., Gao, M., Lee, N. R., Safavi-Naeini, A. H.
2019; 9 (2)
- **Controlling phonons and photons at the wavelength scale: integrated photonics meets integrated phononics (vol 6, pg 213, 2019)** *OPTICA*
Safavi-Naeini, A. H., Van Thourhout, D., Baets, R., Van Laer, R.
2019; 6 (4): 410
- **Diamond optomechanical crystals with embedded nitrogen-vacancy centers** *QUANTUM SCIENCE AND TECHNOLOGY*
Cady, J., Michel, O., Lee, K. W., Patel, R. N., Sarabalis, C. J., Safavi-Naeini, A. H., Jayich, A.
2019; 4 (2)
- **Time-of-flight imaging based on resonant photoelastic modulation** *APPLIED OPTICS*
Atalar, O., Van Laer, R., Sarabalis, C. J., Safavi-Naeini, A. H., Arbabian, A.
2019; 58 (9): 2235–47
- **Controlling phonons and photons at the wavelength scale: integrated photonics meets integrated phononics** *OPTICA*
Safavi-Naeini, A. H., Van Thourhout, D., Baets, R., Van Laer, R.
2019; 6 (2): 213–32

- **Superconducting circuit quantum computing with nanomechanical resonators as storage** *QUANTUM SCIENCE AND TECHNOLOGY*
Pechal, M., Arrangoiz-Arriola, P., Safavi-Naeini, A. H.
2019; 4 (1)
- **Electro-Optics with Gigahertz Phonons in Silicon Photonics**
Van Laer, R., Patel, R. N., Witmer, J. D., McKenna, T. P., Safavi-Naeini, A. H., IEEE
IEEE.2019
- **High-quality Lithium Niobate Optomechanical Crystal**
Jiang, W., Patel, R. N., Mayor, F. M., McKenna, T. P., Arrangoiz-Arriola, P., Sarabalis, C. J., Van Laer, R., Safavi-Naeini, A. H., IEEE
IEEE.2019
- **Quantum Acoustics with Lithium Niobate Nanocavities**
Arrangoiz-Arriola, P., Wollack, E., Pechal, M., Jiang, W., Wang, Z., McKenna, T. P., Safavi-Naeini, A. H., IEEE
IEEE.2019
- **Frequency Tunable Single-Photon Emission From a Single Atomic Defect in a Solid**
Sun, S., Zhang, J., Fischer, K. A., Burek, M. J., Dory, C., Lagoudakis, K. G., Tzeng, Y., Radulaski, M., Kelaita, Y., Safavi-Naeini, A., Shen, Z., Melosh, N. A., Chu, et al
IEEE.2019
- **Microwave Quantum Acoustic Processor**
Arrangoiz-Arriola, P., Wollack, E., Pechal, M., Jiang, W., Wang, Z., McKenna, T. P., Witmer, J., Van Laer, R., Cleland, A., Lee, N., Sarabalis, C. J., Stas, P., Safavi-Naeini, et al
IEEE.2019: 255–58
- **Painting Nonclassical States of Spin or Motion with Shaped Single Photons.** *Physical review letters*
Davis, E. J., Wang, Z., Safavi-Naeini, A. H., Schleier-Smith, M. H.
2018; 121 (12): 123602
- **Painting Nonclassical States of Spin or Motion with Shaped Single Photons** *PHYSICAL REVIEW LETTERS*
Davis, E. J., Wang, Z., Safavi-Naeini, A. H., Schleier-Smith, M. H.
2018; 121 (12)
- **Cavity-Enhanced Raman Emission from a Single Color Center in a Solid.** *Physical review letters*
Sun, S., Zhang, J. L., Fischer, K. A., Burek, M. J., Dory, C., Lagoudakis, K. G., Tzeng, Y., Radulaski, M., Kelaita, Y., Safavi-Naeini, A., Shen, Z., Melosh, N. A., Chu, et al
2018; 121 (8): 083601
- **Optomechanical antennas for on-chip beam-steering** *OPTICS EXPRESS*
Sarabalis, C. J., Van Laer, R., Safavi-Naeini, A. H.
2018; 26 (17): 22075–99
- **Single-Mode Phononic Wire.** *Physical review letters*
Patel, R. N., Wang, Z., Jiang, W., Sarabalis, C. J., Hill, J. T., Safavi-Naeini, A. H.
2018; 121 (4): 040501
- **Single-Mode Phononic Wire** *PHYSICAL REVIEW LETTERS*
Patel, R. N., Wang, Z., Jiang, W., Sarabalis, C. J., Hill, J. T., Safavi-Naeini, A. H.
2018; 121 (4)
- **Coupling a Superconducting Quantum Circuit to a Phononic Crystal Defect Cavity** *PHYSICAL REVIEW X*
Arrangoiz-Arriola, P., Wollack, E., Pechal, M., Witmer, J. D., Hill, J. T., Safavi-Naeini, A. H.
2018; 8 (3)
- **Enhancing a slow and weak optomechanical nonlinearity with delayed quantum feedback** *NATURE COMMUNICATIONS*
Wang, Z., Safavi-Naeini, A. H.
2017; 8: 15886
- **High-Q photonic resonators and electro-optic coupling using silicon-on-lithium-niobate** *SCIENTIFIC REPORTS*

Witmer, J. D., Valery, J. A., Arrangoiz-Arriola, P., Sarabalis, C. J., Hill, J. T., Safavi-Naeini, A. H.
2017; 7

● **Thermal Brillouin noise observed in silicon optomechanical waveguide** *JOURNAL OF OPTICS*

Van Laer, R., Sarabalis, C. J., Baets, R., Van Thourhout, D., Safavi-Naeini, A. H.
2017; 19 (4)

● **Enabling Strong Coupling in Nanoscale Silicon Optomechanical Waveguides**

Van Laer, R., Safavi-Naeini, A., IEEE
IEEE.2017

● **Engineering interactions between superconducting qubits and phononic nanostructures** *PHYSICAL REVIEW A*

Arrangoiz-Arriola, P., Safavi-Naeini, A. H.
2016; 94 (6)

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