

# Stanford

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## Shanhui Fan

Director, Edward L. Ginzton Laboratory, Professor of Electrical Engineering, Senior Fellow at the Precourt Institute for Energy and Professor, by courtesy, of Applied Physics

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### Bio

#### BIO

Fan's research involves the theory and simulations of photonic and solid-state materials and devices; photonic crystals; nano-scale photonic devices and plasmonics; quantum optics; computational electromagnetics; parallel scientific computing.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Senior Fellow, Precourt Institute for Energy
- Professor (By courtesy), Applied Physics
- Affiliate, Precourt Institute for Energy

#### HONORS AND AWARDS

- Fellow, IEEE (2010)
- Fellow, SPIE (2009)
- Fellow, American Physical Society (2008)
- Fellow, Optical Society of America (2007)
- Award for Initiatives in Research, NAS (2007)
- David and Lucile Packard Fellowship in Science and Engineering, David and Lucile Packard (2013)
- David and Lucile Packard Foundation Career Award, David and Lucile Packard (2013)
- Adolph Lomb Medal, National Science Foundation (2013)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- member, Optical Society of America (2013 - present)

#### PROFESSIONAL EDUCATION

- PhD, MIT, Physics (1997)

#### LINKS

- <http://www.stanford.edu/~shanhui>: <http://www.stanford.edu/~shanhui>

## Teaching

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### COURSES

#### 2017-18

- Guided Waves: EE 236B (Win)
- Nanophotonics: EE 336, MATSCI 346 (Aut)

#### 2016-17

- Guided Waves: EE 236B (Win)
- Nanophotonics: EE 336, MATSCI 346 (Aut)

#### 2015-16

- Basic Physics for Solid State Electronics: EE 228 (Spr)
- Guided Waves: EE 236B (Win)

#### 2014-15

- Basic Physics for Solid State Electronics: EE 228 (Spr)
- Guided Waves: EE 236B (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Lars Neustock, Mohammad Zaman, Jingyuan Linda Zhang

#### Postdoctoral Faculty Sponsor

Avik Dutt, Wei Li, Momchil Minkov, Georgia Theano Papadakis, Parthiban Santhanam, Yu Song, Ian Williamson, Meng Xiao, Luqi Yuan, Bo Zhao

#### Doctoral (Program)

Jinhie Skarda

## Publications

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### PUBLICATIONS

- **Input-output formalism for few-photon transport: A systematic treatment beyond two photons** *PHYSICAL REVIEW A*  
Xu, S., Fan, S.  
2015; 91 (4)
- **Heat-flux control and solid-state cooling by regulating chemical potential of photons in near-field electromagnetic heat transfer** *PHYSICAL REVIEW B*  
Chen, K., Santhanam, P., Sandhu, S., Zhu, L., Fan, S.  
2015; 91 (13)
- **Optical separation of heterogeneous size distributions of microparticles on silicon nitride strip waveguides** *OPTICS EXPRESS*  
Khan, S. A., Shi, Y., Chang, C., Jan, C., Fan, S., Ellerbee, A. K., Solgaard, O.  
2015; 23 (7): 8855-8866
- **Near-complete violation of detailed balance in thermal radiation** *PHYSICAL REVIEW B*  
Zhu, L., Fan, S.  
2014; 90 (22)
- **Accelerating simulation of ensembles of locally differing optical structures via a Schur complement domain decomposition** *OPTICS LETTERS*  
Verweij, S., Liu, V., Fan, S.  
2014; 39 (22): 6458-6461

- **Consideration of enhancement of thermal rectification using metamaterial models** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*  
Iizuka, H., Fan, S.  
2014; 148: 156-164
- **Light Guiding by Effective Gauge Field for Photons** *PHYSICAL REVIEW X*  
Lin, Q., Fan, S.  
2014; 4 (3)
- **Total absorption by degenerate critical coupling** *APPLIED PHYSICS LETTERS*  
Piper, J. R., Liu, V., Fan, S.  
2014; 104 (25)
- **Optical Fano resonance of an individual semiconductor nanostructure** *NATURE MATERIALS*  
Fan, P., Yu, Z., Fan, S., Brongersma, M. L.  
2014; 13 (5): 471-475
- **Total Absorption in a Graphene Mono layer in the Optical Regime by Critical Coupling with a Photonic Crystal Guided Resonance** *ACS PHOTONICS*  
Piper, J. R., Fan, S.  
2014; 1 (4): 347-353
- **Fluctuational electrodynamics calculations of near-field heat transfer in non-planar geometries: A brief overview** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*  
Otey, C. R., Zhu, L., Sandhu, S., Fan, S.  
2014; 132: 3-11
- **Light Trapping in Photonic Crystals** *Conference on Thin Films for Solar and Energy Technology VI*  
Wang, K. X., Yu, Z., Liu, V., Raman, A., Cui, Y., Fan, S.  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **Ultrahigh contrast and large-bandwidth thermal rectification in near-field electromagnetic thermal transfer between nanoparticles** *Conference on Nanophotonic Materials XI*  
Zhu, L., Otey, C. R., Fan, S.  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **Efficiency above the Shockley-Queisser Limit by Using Nanophotonic Effects To Create Multiple Effective Bandgaps With a Single Semiconductor** *NANO LETTERS*  
Yu, Z., Sandhu, S., Fan, S.  
2014; 14 (1): 66-70
- **Coupled double-layer Fano resonance photonic crystal filters with lattice-displacement** *APPLIED PHYSICS LETTERS*  
Shuai, Y., Zhao, D., Chadha, A. S., Seo, J., Yang, H., Fan, S., Ma, Z., Zhou, W.  
2013; 103 (24)
- **Deep subwavelength plasmonic waveguide switch in double graphene layer structure** *APPLIED PHYSICS LETTERS*  
Iizuka, H., Fan, S.  
2013; 103 (23)
- **Analytic properties of two-photon scattering matrix in integrated quantum systems determined by the cluster decomposition principle.** *Physical review letters*  
Xu, S., Rephaeli, E., Fan, S.  
2013; 111 (22): 223602-?
- **Analytic Properties of Two-Photon Scattering Matrix in Integrated Quantum Systems Determined by the Cluster Decomposition Principle** *PHYSICAL REVIEW LETTERS*  
Xu, S., Rephaeli, E., Fan, S.  
2013; 111 (22)
- **Color-preserving daytime radiative cooling** *APPLIED PHYSICS LETTERS*  
Zhu, L., Raman, A., Fan, S.

2013; 103 (22)

- **Controlling the Flow of Light Using the Inhomogeneous Effective Gauge Field that Emerges from Dynamic Modulation** *PHYSICAL REVIEW LETTERS*  
Fang, K., Fan, S.  
2013; 111 (20)
- **Ultrahigh-contrast and large-bandwidth thermal rectification in near-field electromagnetic thermal transfer between nanoparticles** *PHYSICAL REVIEW B*  
Zhu, L., Otey, C. R., Fan, S.  
2013; 88 (18)
- **Effective magnetic field for photons based on the magneto-optical effect** *PHYSICAL REVIEW A*  
Fang, K., Fan, S.  
2013; 88 (4)
- **A lateral optical equilibrium in waveguide-resonator optical force** *OPTICS EXPRESS*  
Intaraprasongk, V., Fan, S.  
2013; 21 (21): 25257-25270
- **Double-layer Fano resonance photonic crystal filters** *OPTICS EXPRESS*  
Shuai, Y., Zhao, D., Tian, Z., Seo, J., Plant, D. V., Ma, Z., Fan, S., Zhou, W.  
2013; 21 (21): 24582-24589
- **Dissipation in few-photon waveguide transport [Invited]** *PHOTONICS RESEARCH*  
Rephaeli, E., Fan, S.  
2013; 1 (3): 110-114
- **Accelerated solution of the frequency-domain Maxwell's equations by engineering the eigenvalue distribution of the operator** *OPTICS EXPRESS*  
Shin, W., Fan, S.  
2013; 21 (19): 22578-22595
- **Optical pulling force and conveyor belt effect in resonator-waveguide system** *OPTICS LETTERS*  
Intaraprasongk, V., Fan, S.  
2013; 38 (17): 3264-3267
- **Photonic de Haas-van Alphen effect** *OPTICS EXPRESS*  
Fang, K., Yu, Z., Fan, S.  
2013; 21 (15): 18216-18224
- **Modeling Coherent Backscattering Errors in Fiber Optic Gyroscopes for Sources of Arbitrary Line Width** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Lloyd, S. W., Digonnet, M. J., Fan, S.  
2013; 31 (13): 2070-2078
- **Experimental Observation of Low Noise and Low Drift in a Laser-Driven Fiber Optic Gyroscope** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Lloyd, S. W., Fan, S., Digonnet, M. J.  
2013; 31 (13): 2079-2085
- **Slow-Light Fiber-Bragg-Grating Strain Sensor With a 280-femtostrain/root Hz Resolution** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Wen, H., Skolianos, G., Fan, S., Bernier, M., Vallee, R., Digonnet, M. J.  
2013; 31 (11): 1804-1808
- **Wireless power transfer in the presence of metallic plates: Experimental results** *AIP ADVANCES*  
Yu, X., Skauli, T., Skauli, B., Sandhu, S., Catrysse, P. B., Fan, S.  
2013; 3 (6)
- **Near-infrared surface plasmon polariton dispersion control with hyperbolic metamaterials** *OPTICS EXPRESS*  
Luk, T. S., Kim, I., Campione, S., Howell, S. W., Subramania, G. S., Grubbs, R. K., Brener, I., Chen, H., Fan, S., Sinclair, M. B.  
2013; 21 (9): 11107-11114
- **Upper bound on the modal material loss rate in plasmonic and metamaterial systems.** *Physical review letters*  
Raman, A., Shin, W., Fan, S.

2013; 110 (18): 183901-?

- **Resonant cavity enhanced light harvesting in flexible thin-film organic solar cells** *OPTICS LETTERS*  
Sergeant, N. P., Niesen, B., Liu, A. S., Boman, L., Stoessel, C., Heremans, P., Peumans, P., Rand, B. P., Fan, S.  
2013; 38 (9): 1431-1433
- **Compact bends for multi-mode photonic crystal waveguides with high transmission and suppressed modal crosstalk** *OPTICS EXPRESS*  
Liu, V., Fan, S.  
2013; 21 (7): 8069-8075
- **Ultrabroadband Photonic Structures To Achieve High-Performance Daytime Radiative Cooling** *NANO LETTERS*  
Rephaeli, E., Raman, A., Fan, S.  
2013; 13 (4): 1457-1461
- **Experimental Assessment of the Accuracy of an Advanced Photonic-Bandgap-Fiber Model** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Aghaie, K. Z., Dignonnet, M. J., Fan, S.  
2013; 31 (7): 1015-1022
- **Fluorescence Correlation Spectroscopy at High Concentrations using Gold Bowtie Nanoantennas (vol 406C, pg 3, 2012)** *CHEMICAL PHYSICS*  
Kinkhabwala, A. A., Yu, Z., Fan, S., Moerner, E.  
2013; 415: 309-309
- **Temporal coupled mode theory for thermal emission from a single thermal emitter supporting either a single mode or an orthogonal set of modes** *APPLIED PHYSICS LETTERS*  
Zhu, L., Sandhu, S., Otey, C., Fan, S., Sinclair, M. B., Luk, T. S.  
2013; 102 (10)
- **Experimental demonstration of a photonic Aharonov-Bohm effect at radio frequencies** *PHYSICAL REVIEW B*  
Fang, K., Yu, Z., Fan, S.  
2013; 87 (6)
- **Highly Tailored Computational Electromagnetics Methods for Nanophotonic Design and Discovery** *PROCEEDINGS OF THE IEEE*  
Liu, V., Miller, D. A., Fan, S.  
2013; 101 (2): 484-493
- **Transparent and conductive paper from nanocellulose fibers** *ENERGY & ENVIRONMENTAL SCIENCE*  
Hu, L., Zheng, G., Yao, J., Liu, N., Weil, B., Eskilsson, M., Karabulut, E., Ruan, Z., Fan, S., Bloking, J. T., McGehee, M. D., Wagberg, L., Cui, et al  
2013; 6 (2): 513-518
- **Tight-binding calculation of radiation loss in photonic crystal CROW** *OPTICS EXPRESS*  
Ma, J., Martinez, L. J., Fan, S., Povinelli, M. L.  
2013; 21 (2): 2463-2473
- **Fundamental bounds on decay rates in asymmetric single-mode optical resonators** *OPTICS LETTERS*  
Wang, K. X., Yu, Z., Sandhu, S., Fan, S.  
2013; 38 (2): 100-102
- **Detailed balance analysis of nanophotonic solar cells** *OPTICS EXPRESS*  
Sandhu, S., Yu, Z., Fan, S.  
2013; 21 (1): 1209-1217
- **Routing of Deep-Subwavelength Optical Beams and Images without Reflection and Diffraction Using Infinitely Anisotropic Metamaterials** *ADVANCED MATERIALS*  
Catrysse, P. B., Fan, S.  
2013; 25 (2): 194-198
- **Synthetic magnetic field directs photons** *PHOTONICS SPECTRA*  
Fan, S.  
2013; 47 (1): 28-?

- **Photonic structures: advanced thermal control, and effective gauge field for light** *7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (METAMATERIALS)*  
Fan, S., Yu, Z., Fang, K., Rephaeli, E., Raman, A.  
IEEE.2013: 232–233
- **Manipulating Thermal Electromagnetic Fields by Engineering Nanophotonic Resonances** *10th Conference on Lasers and Electro-Optics Pacific Rim (CLEO-PR)*  
Fan, S., Yu, Z., Rephaeli, E., Raman, A.  
IEEE.2013
- **Local density of states of chiral Hall edge states in gyrotropic photonic clusters** *Physical Review B*  
Fan, S., H., Asatryan, A., A., Botten, L., C., Fang et. al., K., J.  
2013; 88 (3)
- **Color-preserving daytime radiative cooling** *Applied Physics Letters*  
Zhu, L., X., Raman, A., Fan, S., H.  
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- **Effective magnetic field for photons based on the magneto-optical effect** *Physical Review A*  
Fang, K., J., Fan, S., H.  
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- **Deep subwavelength plasmonic waveguide switch in double graphene layer structure** *Applied Physics Letters*  
Iizuka, H., Fan, S., H.  
2013; 103 (23)
- **What is - and what is not - an optical isolator** *Nature Photonics*  
Fan, S., H., Jalas, D., Petrov, A., Eich et. al., M.  
2013; 7 (8): 579-582
- **Upper Bound on the Modal Material Loss Rate in Plasmonic and Metamaterial Systems** *Physical Review Letters*  
Raman, A., Shin, W., Fan, S., H.  
2013; 110 (18)
- **Two-photon transport through a waveguide coupling to a whispering-gallery resonator containing an atom and photon-blockade effect** *Physical Review A*  
Shi, T., Fan, S., H.  
2013; 87 (6)
- **Two-Dimensional Chalcogenide Nanoplates as Tunable Metamaterials via Chemical Intercalation** *Nano Letters*  
Fan, S., H., Cha, J., J., Koski, K., J., Huang et al., K., C. Y.  
2013; 13 (12): 5913-5918
- **Metamaterial band theory: fundamentals & applications** *Science China-Information Sciences*  
Raman, A., P., Shin, W., Fan, S., H.  
2013; 56 (12)
- **Experimental demonstration of a photonic Aharonov-Bohm effect at radio frequencies** *Physical Review B*  
Fang, K., J., Yu, Z., F., Fan, S., H.  
2013; 87 (6)
- **Coupled double-layer Fano resonance photonic crystal filters with lattice-displacement** *Applied Physics Letters*  
Fan, S., H., Shuai, Y., C., Zhao, D., Y., Chadha et al, A., S.  
2013; 103 (24)
- **Analytic Properties of Two-Photon Scattering Matrix in Integrated Quantum Systems Determined by the Cluster Decomposition Principle** *Physical Review Letters*  
Xu, S., S., Rephaeli, E., Fan, S., H.  
2013; 111 (22)
- **A transparent electrode based on a metal nanotrough network** *Nature Nanotechnology*

- Fan, S., H., Wu, H., Kong, S., D., Ruan et al., C., Z.  
2013; 8 (6): 421-425
- **Enhancing far-field thermal emission with thermal extraction** *Nature Communications*  
Fan, S., H., Yu, Z., Sergeant, N., P., Skauli et al., T.  
2013; 4
  - **Broadband Sharp 90-degree Bends and T-Splitters in Plasmonic Coaxial Waveguides** *Nano Letters*  
Fan, S., H., Shin, W., Cai, W., S., Catrysse et al., P., B.  
2013; 13 (10): 4753-4758
  - **Ultrahigh-contrast and large-bandwidth thermal rectification in near-field electromagnetic thermal transfer between nanoparticles** *Physical Review B*  
Zhu, L., X., Otey, C., R., Fan, S., H.  
2013; 88 (18)
  - **Three-dimensional self-assembled photonic crystals with high temperature stability for thermal emission modification** *Nature Communications*  
Fan, S., H., Arpin, K., A., Losego, M., D., Cloud et. al., A., N.  
2013; 4
  - **Fluorescence Correlation Spectroscopy at High Concentrations using Gold Bowtie Nanoantennas (vol 406C, pg 3, 2012)** *Chemical Physics*  
Kinkhabwala, A., A., Yu, Z., F., Fan et. al., S., H.  
2013; 415: 309
  - **Controlling the Flow of Light Using the Inhomogeneous Effective Gauge Field that Emerges from Dynamic Modulation** *Physical Review Letters*  
Fang, K., J., Fan, S., H.  
2013; 111 (20)
  - **Wireless power transfer in the presence of metallic plates: Experimental results** *Aip Advances*  
Fan, S., H., Yu, X., F., Skauli, T., Skauli et. al., B.  
2013; 3 (6)
  - **Temporal coupled mode theory for thermal emission from a single thermal emitter supporting either a single mode or an orthogonal set of modes** *Applied Physics Letters*  
Fan, S., H., Zhu, L., X., Sandhu, S., Otey et. al., C.  
2013; 102 (10)
  - **Optimization of non-periodic plasmonic light-trapping layers for thin-film solar cells** *Nature Communications*  
Fan, S., H., Pala, R., A., Liu, J., S. Q., Barnard et. al., E., S.  
2013; 4
  - **Modal Source Radiator Model for Arbitrary Two-Dimensional Arrays of Subwavelength Apertures on Metal Films** *Ieee Journal of Selected Topics in Quantum Electronics*  
Tanemura, T., Wahl, P., Fan et. al., S., H.  
2013; 19 (3)
  - **Enhancing far-field thermal emission with thermal extraction.** *Nature communications*  
Yu, Z., Sergeant, N. P., Skauli, T., Zhang, G., Wang, H., Fan, S.  
2013; 4: 1730-?
  - **Enhancing the waveguide-resonator optical force with an all-optical on-chip analog of electromagnetically induced transparency** *PHYSICAL REVIEW A*  
Intaraprasongk, V., Fan, S.  
2012; 86 (6)
  - **Ultra-compact photonic crystal waveguide spatial mode converter and its connection to the optical diode effect** *OPTICS EXPRESS*  
Liu, V., Miller, D. A., Fan, S.  
2012; 20 (27): 28388-28397
  - **A simple Bayesian decision-theoretic design for dose-finding trials** *STATISTICS IN MEDICINE*  
Fan, S. K., Lu, Y., Wang, Y.  
2012; 31 (28): 3719-3730

- **On the Time to Conclusion of Phase II Cancer Clinical Trials and Its Application in Trial Designs** *STATISTICS IN BIOPHARMACEUTICAL RESEARCH*  
2012; 4 (4): 324-335
- **Few-Photon Single-Atom Cavity QED With Input-Output Formalism in Fock Space** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*  
Rephaeli, E., Fan, S.  
2012; 18 (6): 1754-1762
- **Realizing effective magnetic field for photons by controlling the phase of dynamic modulation** *NATURE PHOTONICS*  
Fang, K., Yu, Z., Fan, S.  
2012; 6 (11): 782-787
- **Thermodynamic Upper Bound on Broadband Light Coupling with Photonic Structures** *PHYSICAL REVIEW LETTERS*  
Yu, Z., Raman, A., Fan, S.  
2012; 109 (17)
- **Fluorescence correlation spectroscopy at high concentrations using gold bowtie nanoantennas** *CHEMICAL PHYSICS*  
Kinkhabwala, A. A., Yu, Z., Fan, S., Moerner, W. E.  
2012; 406: 3-8
- **Optical Absorption Enhancement in Freestanding GaAs Thin Film Nanopyramid Arrays** *ADVANCED ENERGY MATERIALS*  
Liang, D., Huo, Y., Kang, Y., Wang, K. X., Gu, A., Tan, M., Yu, Z., Li, S., Jia, J., Bao, X., Wang, S., Yao, Y., Wong, et al  
2012; 2 (10): 1254-1260
- **S-4: A free electromagnetic solver for layered periodic structures** *COMPUTER PHYSICS COMMUNICATIONS*  
Liu, V., Fan, S.  
2012; 183 (10): 2233-2244
- **Design for broadband on-chip isolator using stimulated Brillouin scattering in dispersion-engineered chalcogenide waveguides** *OPTICS EXPRESS*  
Poulton, C. G., Pant, R., Byrnes, A., Fan, S., Steel, M. J., Eggleton, B. J.  
2012; 20 (19): 21235-21246
- **Near-Field Radiative Cooling of Nanostructures** *NANO LETTERS*  
Guha, B., Otey, C., Poitras, C. B., Fan, S., Lipson, M.  
2012; 12 (9): 4546-4550
- **Photonic chip based tunable and reconfigurable narrowband microwave photonic filter using stimulated Brillouin scattering** *OPTICS EXPRESS*  
Byrnes, A., Pant, R., Li, E., Choi, D., Poulton, C. G., Fan, S., Madden, S., Luther-Davies, B., Eggleton, B. J.  
2012; 20 (17): 18836-18845
- **Electrically Driven Nonreciprocity Induced by Interband Photonic Transition on a Silicon Chip** *PHYSICAL REVIEW LETTERS*  
Lira, H., Yu, Z., Fan, S., Lipson, M.  
2012; 109 (3)
- **Rectification of evanescent heat transfer between dielectric-coated and uncoated silicon carbide plates** *JOURNAL OF APPLIED PHYSICS*  
Iizuka, H., Fan, S.  
2012; 112 (2)
- **Hybrid Silicon Nanocone-Polymer Solar Cells** *NANO LETTERS*  
Jeong, S., Garnett, E. C., Wang, S., Yu, Z., Fan, S., Brongersma, M. L., McGehee, M. D., Cui, Y.  
2012; 12 (6): 2971-2976
- **High-Efficiency Amorphous Silicon Solar Cell on a Periodic Nanocone Back Reflector** *ADVANCED ENERGY MATERIALS*  
Hsu, C., Battaglia, C., Pahud, C., Ruan, Z., Haug, F., Fan, S., Ballif, C., Cui, Y.  
2012; 2 (6): 628-633
- **Instantaneous electric energy and electric power dissipation in dispersive media** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*  
Shin, W., Raman, A., Fan, S.  
2012; 29 (5): 1048-1054



- **Choice of the perfectly matched layer boundary condition for frequency-domain Maxwell's equations solvers** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Shin, W., Fan, S.  
2012; 231 (8): 3406-3431
- **Temporal coupled-mode theory for light scattering by an arbitrarily shaped object supporting a single resonance** *PHYSICAL REVIEW A*  
Ruan, Z., Fan, S.  
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- **Photonic Aharonov-Bohm Effect Based on Dynamic Modulation** *PHYSICAL REVIEW LETTERS*  
Fang, K., Yu, Z., Fan, S.  
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- **Stimulated Emission from a Single Excited Atom in a Waveguide** *PHYSICAL REVIEW LETTERS*  
Rephaeli, E., Fan, S.  
2012; 108 (14)
- **Resonant Fiber Optic Gyroscope Using an Air-Core Fiber** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Terrel, M. A., Dignonnet, M. J., Fan, S.  
2012; 30 (7): 931-937
- **Absorption Enhancement in Ultrathin Crystalline Silicon Solar Cells with Antireflection and Light-Trapping Nanocone Gratings** *NANO LETTERS*  
Wang, K. X., Yu, Z., Liu, V., Cui, Y., Fan, S.  
2012; 12 (3): 1616-1619
- **From Electromagnetically Induced Transparency to Superscattering with a Single Structure: A Coupled-Mode Theory for Doubly Resonant Structures** *PHYSICAL REVIEW LETTERS*  
Verslegers, L., Yu, Z., Ruan, Z., Catrysse, P. B., Fan, S.  
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- **Resonance fluorescence in a waveguide geometry** *PHYSICAL REVIEW A*  
Kocabas, S. E., Rephaeli, E., Fan, S.  
2012; 85 (2)
- **Lossless intensity modulation in integrated photonics** *OPTICS EXPRESS*  
Sandhu, S., Fan, S.  
2012; 20 (4): 4280-4290
- **Broadband light management using low-Q whispering gallery modes in spherical nanoshells** *NATURE COMMUNICATIONS*  
Yao, Y., Yao, J., Narasimhan, V. K., Ruan, Z., Xie, C., Fan, S., Cui, Y.  
2012; 3
- **Negative differential thermal conductance through vacuum** *APPLIED PHYSICS LETTERS*  
Zhu, L., Otey, C. R., Fan, S.  
2012; 100 (4)
- **Comment on "Nonreciprocal Light Propagation in a Silicon Photonic Circuit"** *SCIENCE*  
Fan, S., Baets, R., Petrov, A., Yu, Z., Joannopoulos, J. D., Freude, W., Melloni, A., Popovic, M., Vanwolleghem, M., Jalas, D., Eich, M., Krause, M., Renner, et al  
2012; 335 (6064)
- **Temperature dependence of surface phonon polaritons from a quartz grating (vol 110, 043517, 2011)** *JOURNAL OF APPLIED PHYSICS*  
Hafeli, A. K., Rephaeli, E., Fan, S., Cahill, D. G., Tiwald, T. E.  
2012; 111 (1)
- **From Electromagnetically Induced Transparency to Superscattering with a Single Structure: A Coupled-Mode Theory for Doubly Resonant Structures** *Physical Review Letters*  
Fan, S., H., Verslegers, L., Yu, Z., F., Ruan et al., Z., C.  
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- **Temporal coupled-mode theory for light scattering by an arbitrarily shaped object supporting a single resonance** *Physical Review A*  
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Kocabas, S., E., Rephaeli, E., Fan, S., H.  
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Yu, Z., F., Raman, A., Fan, S., H.  
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- **Temperature dependence of surface phonon polaritons from a quartz grating (vol 110, 043517, 2011)** *Journal of Applied Physics*  
Hafeli, A., K., Rephaeli, E., Fan et. al., S., H.  
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Fan, S., H., Baets, R., Petrov et. al., A.  
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Fan, S., H., Yao, Y., Yao, J., Narasimhan et. al., V., K.  
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