



Martin Fejer

J. G. Jackson and C. J. Wood Professor of Physics
Applied Physics

Bio

ACADEMIC APPOINTMENTS

- Professor, Applied Physics

Teaching

COURSES

2026-27

- Introduction to Nonlinear Optics: EE 346 (Win)
- Laser Dynamics: EE 332 (Aut)
- Optics and Electronics Seminar: APPPHYS 483 (Aut, Win, Spr)

2025-26

- Introduction to Nonlinear Optics: EE 346 (Win)
- Laser Dynamics: EE 332 (Aut)
- Optics and Electronics Seminar: APPPHYS 483 (Aut, Win, Spr)

2024-25

- Introduction to Nonlinear Optics: EE 346 (Win)
- Laser Dynamics: EE 332 (Aut)
- Optics and Electronics Seminar: APPPHYS 483 (Aut, Win, Spr)

2023-24

- Introduction to Nonlinear Optics: EE 346 (Spr)
- Optics and Electronics Seminar: APPPHYS 483 (Aut, Win, Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Devin Dean, Oliver Hitchcock, Annie Kroo, Evan Laksono, Luke Qi, Abigail Stein, Winslow Weiss

Publications

PUBLICATIONS

- Amorphous Zirconia-doped Tantara modeling and simulations using explicit multi-element spectral neighbor analysis machine learning potentials (EME-SNAP) *Physical Review Materials*

- Jiang, J., Li, X., Mishkin, A. S., Zhang, R., Bassiri, R., Fry, J. N., Fejer, M. M., Cheng, H.
2023; 7
- **Complex-transfer-function analysis of optical-frequency converters** *OPTICS LETTERS*
Chang, D., Langrock, C., Lin, Y., Phillips, C. R., Bennett, C. V., Fejer, M. M.
2014; 39 (17): 5106-5109
 - **Experimental passive decoy-state quantum key distribution** *LASER PHYSICS LETTERS*
Sun, Q., Wang, W., Liu, Y., Zhou, F., Pelc, J. S., Fejer, M. M., Peng, C., Chen, X., Ma, X., Zhang, Q., Pan, J.
2014; 11 (8)
 - **Demonstration of all-optical phase noise suppression scheme using optical nonlinearity and conversion/dispersion delay** *OPTICS LETTERS*
Chitgarha, M. R., Khaleghi, S., Ziyadi, M., Mohajerin-Ariaei, A., Almainan, A., Daab, W., Rogawski, D., Tur, M., Touch, J. D., Langrock, C., Fejer, M. M., Willner, A. E.
2014; 39 (10): 2928-2931
 - **Generation of biphoton correlation trains through spectral filtering** *OPTICS EXPRESS*
Lukens, J. M., Odele, O., Langrock, C., Fejer, M. M., Leaird, D. E., Weiner, A. M.
2014; 22 (8): 9585-9596
 - **Experimental characterization of phase tuning using fine wavelength offsets in a tunable complex-coefficient optical tapped-delay-line** *OPTICS LETTERS*
Khaleghi, S., Chitgarha, M. R., Yilmaz, O. F., Tur, M., Haney, M. W., Langrock, C., Fejer, M. M., Willner, A. E.
2014; 39 (4): 735-738
 - **Tunable optical correlator using an optical frequency comb and a nonlinear multiplexer** *OPTICS EXPRESS*
Ziyadi, M., Chitgarha, M. R., Khaleghi, S., Mohajerin-Ariaei, A., Almainan, A., Touch, J., Tur, M., Langrock, C., Fejer, M. M., Willner, A. E.
2014; 22 (1): 84-89
 - **Upconversion detection near 2 μ m at the single photon level** *OPTICS LETTERS*
Shentu, G., Xia, X., Sun, Q., Pelc, J. S., Fejer, M. M., Zhang, Q., Pan, J.
2013; 38 (23): 4985-4987
 - **Biphoton manipulation with a fiber-based pulse shaper** *OPTICS LETTERS*
Lukens, J. M., Dezfouliyan, A., Langrock, C., Fejer, M. M., Leaird, D. E., Weiner, A. M.
2013; 38 (22): 4652-4655
 - **Simultaneous and independent processing of multiple input WDM data signals using a tunable optical tapped delay line** *OPTICS LETTERS*
Khaleghi, S., Chitgarha, M. R., Ziyadi, M., Daab, W., Mohajerin-Ariaei, A., Rogawski, D., Touch, J. D., Tur, M., Langrock, C., Fejer, M. M., Willner, A. E.
2013; 38 (21): 4273-4276
 - **217 km long distance photon-counting optical time-domain reflectometry based on ultra-low noise up-conversion single photon detector** *OPTICS EXPRESS*
Shentu, G., Sun, Q., Jiang, X., Wang, X., Pelc, J. S., Fejer, M. M., Zhang, Q., Pan, J.
2013; 21 (21): 24674-24679
 - **Spectral response of an upconversion detector and spectrometer** *OPTICS EXPRESS*
Kuo, P. S., Slattery, O., Kim, Y., Pelc, J. S., Fejer, M. M., Tang, X.
2013; 21 (19): 22523-22531
 - **Demonstration of reconfigurable optical generation of higher-order modulation formats up to 64 QAM using optical nonlinearity** *OPTICS LETTERS*
Chitgarha, M. R., Khaleghi, S., Bakhtiari, Z., Ziyadi, M., Gerstel, O., Paraschis, L., Langrock, C., Fejer, M. M., Willner, A. E.
2013; 38 (17): 3350-3353
 - **Interaction of independent single photons based on integrated nonlinear optics** *NATURE COMMUNICATIONS*
Guerreiro, T., Pomarico, E., Sanguinetti, B., Sangouard, N., Pelc, J. S., Langrock, C., Fejer, M. M., Zbinden, H., Thew, R. T., Gisin, N.
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- **Complete tomography of a high-fidelity solid-state entangled spin-photon qubit pair.** *Nature communications*
De Greve, K., McMahon, P. L., Yu, L., Pelc, J. S., Jones, C., Natarajan, C. M., Kim, N. Y., Abe, E., Maier, S., Schneider, C., Kamp, M., Höfling, S., Hadfield, et al
2013; 4: 2228-?
- **Coherent correlator and equalizer using a reconfigurable all-optical tapped delay line** *OPTICS LETTERS*
Chitgarha, M. R., Khaleghi, S., Yilmaz, O. F., Tur, M., Haney, M. W., Langrock, C., Fejer, M. M., Willner, A. E.
2013; 38 (13): 2271-2273
- **Ultralow noise up-conversion detector and spectrometer for the telecom band** *OPTICS EXPRESS*
Shentu, G., Pelc, J. S., Wang, X., Sun, Q., Zheng, M., Fejer, M. M., Zhang, Q., Pan, J.
2013; 21 (12): 13986-13991
- **Apodization of chirped quasi-phases-matching devices** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
Phillips, C. R., Langrock, C., Chang, D., Lin, Y. W., Gallmann, L., Fejer, M. M.
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- **Reconfigurable optical quadrature amplitude modulation converter/encoder using a tunable complex coefficient optical tapped delay line** *OPTICS LETTERS*
Khaleghi, S., Chitgarha, M. R., Yilmaz, O. F., Tur, M., Haney, M. W., Langrock, C., Fejer, M. M., Willner, A. E.
2013; 38 (10): 1600-1602
- **Reducing noise in single-photon-level frequency conversion** *OPTICS LETTERS*
Kuo, P. S., Pelc, J. S., Slattery, O., Kim, Y., Fejer, M. M., Tang, X.
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- **Characteristics and instabilities of mode-locked quantum-dot diode lasers** *OPTICS EXPRESS*
Li, Y., Lester, L. F., Chang, D., Langrock, C., Fejer, M. M., Kane, D. J.
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- **Parametric processes in quasi-phases-matching gratings with random duty cycle errors** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
Phillips, C. R., Pelc, J. S., Fejer, M. M.
2013; 30 (4): 982-993
- **104 MHz rate single-shot recording with subpicosecond resolution using temporal imaging** *OPTICS EXPRESS*
Hernandez, V. J., Bennett, C. V., Moran, B. D., Drobshoff, A. D., Chang, D., Langrock, C., Fejer, M. M., Ibsen, M.
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- **Downconversion quantum interface for a single quantum dot spin and 1550-nm single-photon channel** *OPTICS EXPRESS*
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2012; 37 (19): 3975-3977
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- **Experimental performance of a fully tunable complex-coefficient optical FIR filter using wavelength conversion and chromatic dispersion** *OPTICS LETTERS*
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2012; 37 (16): 3420-3422
- **Dual-channel, single-photon upconversion detector at 1.3 μ m** *OPTICS EXPRESS*
Pelc, J. S., Kuo, P. S., Slattery, O., Ma, L., Tang, X., Fejer, M. M.
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- **High-Speed Correlation and Equalization Using a Continuously Tunable All-Optical Tapped Delay Line** *IEEE PHOTONICS JOURNAL*
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2012; 4 (4): 1220-1235
- **Widely tunable midinfrared difference frequency generation in orientation-patterned GaAs pumped with a femtosecond Tm-fiber system** *OPTICS LETTERS*
Phillips, C. R., Jiang, J., Mohr, C., Lin, A. C., Langrock, C., Snure, M., Bliss, D., Zhu, M., Hartl, I., Harris, J. S., Fermann, M. E., Fejer, M. M.
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- **Cascaded frequency upconversion for high-speed single-photon detection at 1550 nm** *OPTICS LETTERS*
Pelc, J. S., Zhang, Q., Phillips, C. R., Yu, L., Yamamoto, Y., Fejer, M. M.
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- **Adiabatic optical parametric oscillators: steady-state and dynamical behavior** *OPTICS EXPRESS*
Phillips, C. R., Fejer, M. M.
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- **Long-wavelength-pumped upconversion single-photon detector at 1550 nm: performance and noise analysis** *OPTICS EXPRESS*
Pelc, J. S., Ma, L., Phillips, C. R., Zhang, Q., Langrock, C., Slattery, O., Tang, X., Fejer, M. M.
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- **Supercontinuum generation in quasi-phase-matched LiNbO₃ waveguide pumped by a Tm-doped fiber laser system** *OPTICS LETTERS*
Phillips, C. R., Langrock, C., Pelc, J. S., Fejer, M. M., Jiang, J., Fermann, M. E., Hartl, I.
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- **Supercontinuum generation in quasi-phasematched waveguides** *OPTICS EXPRESS*
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- **Pyroelectrically induced photorefractive damage in magnesium-doped lithium niobate crystals** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
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Phillips, C. R., Pelc, J. S., Fejer, M. M.
2011; 36 (15): 2973-2975
- **Efficiency pedestal in quasi-phase-matching devices with random duty-cycle errors** *OPTICS LETTERS*
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- **Efficiency and phase of optical parametric amplification in chirped quasi-phase-matched gratings** *OPTICS LETTERS*
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Heese, C., Phillips, C. R., Gallmann, L., Fejer, M. M., Keller, U.
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- **Light absorption in undoped congruent and magnesium-doped lithium niobate crystals in the visible wavelength range** *APPLIED PHYSICS B-LASERS AND OPTICS*
Schwesyg, J. R., Kajiyama, M. C., Falk, M., Jundt, D. H., Buse, K., Fejer, M. M.
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- **Hong-Ou-Mandel Dip Using Degenerate Photon Pairs from a Single Periodically Poled Lithium Niobate Waveguide with Integrated Mode Demultiplexer** *JAPANESE JOURNAL OF APPLIED PHYSICS*
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- **Theory and simulation of gain-guided noncollinear modes in chirped quasi-phase-matched optical parametric amplifiers** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
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Schwesyg, J. R., Phillips, C. R., Ioakeimidi, K., Kajiyama, M. C., Falk, M., Jundt, D. H., Buse, K., Fejer, M. M.
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Christen, L., Yilmaz, O. F., Nuccio, S., Wu, X., Fazal, I., Willner, A. E., Langrock, C., Fejer, M. M.
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- **Room-Temperature Stable Generation of 19 Watts of Single-Frequency 532-nm Radiation in a Periodically Poled Lithium Tantalate Crystal** *JOURNAL OF LIGHTWAVE TECHNOLOGY*
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- **Optical parametric amplifiers using nonuniform quasi-phase-matched gratings. II. Space-time evolution of light pulses** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
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- **Optical parametric amplifiers using chirped quasi-phase-matching gratings I: practical design formulas** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
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- **Polar Kerr-effect measurements of the high-temperature YBa₂Cu₃O_{6+x} superconductor: Evidence for broken symmetry near the pseudogap temperature** *PHYSICAL REVIEW LETTERS*
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Schaar, J. E., Vodopyanov, K. L., Kuo, P. S., Fejer, M. M., Yu, X., Lin, A., Harris, J. S., Bliss, D., Lynch, C., Kozlov, V. G., Hurlbut, W.
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- **Laser transmitter for undersea communications using third-harmonic generation of fiber-laser system at 1.5 μ m** *IEEE PHOTONICS TECHNOLOGY LETTERS*
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- **Experimental observation of all-optical non-return-to-zero-to-return-to-zero format conversion based on cascaded second-order nonlinearity assisted by active mode-locking** *OPTICS LETTERS*
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- **Correlated photon-pair generation in reverse-proton-exchange PPLN waveguides with integrated mode demultiplexer at 10 GHz clock** *OPTICS EXPRESS*
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