



People

Optical Physics, Quantum Electronics, and Photonics

Chris Xu



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Visit our research group at the [Cornell Fiber Optics Group](#) web page.

Professor Xu joined Cornell faculty in the fall of 2002. Prior to that, he was a member of technical staff in Advanced Photonic Research at Bell Laboratories from 1999 to 2002. He joined Bell Laboratories as a postdoctoral member in 1997. Professor Xu received his Ph.D. from Cornell in the department of Applied and Engineering Physics in 1996, and earned his B.S. in physics from Fudan University

in Shanghai. He is the recipient of the 2004 Tau Beta Pi Teaching Award, presented by the Cornell Society of Engineers. Besides technical publications, he has 15 patents granted or pending.

Research Interests

Our research consists of three main areas: biomedical imaging, optical instrumentation, and optical communications. Our emphasis is on the practical applications of photonics and fiber optics, ranging from new concepts and devices to full-scale systems. Techniques involved include both numerical modeling and experimental investigations. Several industrial partners participate in this program, providing capabilities in the fabrication of specialty fibers and optoelectronic devices.

Research Support

NSF, NIH/NCRR, and NIH/NCI.

Selected Publications

- SX. Cheng, K. L. Reichenbach, and C. Xu "Experimental and theoretical analysis of core-to-core coupling on fiber bundle imaging" Opt. Express, 16, 21598-21607, (2008).
- D. Zhang, L. Qian, P. Yuan, H. Zhu, S. Wen, and C. Xu "Fiber array-based detection scheme for single-shot pulse contrast characterization" Opt. Lett. 33, 1969-1972, (2008).
- Y. Okawachi, M. A. Foster, X. Chen, A. C. Turner-Foster, R. Salem, M. Lipson, C. Xu, and A. L. Gaeta, "Large tunable delays using parametric mixing and phase conjugation in Si nanowaveguides," Opt. Express 16, 10349-10357 (2008)
- J. Lee, J. van Howe, C. Xu, X. Liu "Soliton Self-Frequency Shift: Experimental Demonstrations and Applications" J. Sel. Topics in Quantum Elec., Vol. 14, No. 3, pp. 713-723, 2008.
- M. E. Durst, G. Zhu, and C. Xu "Simultaneous spatial and temporal focusing in nonlinear microscopy" Opt. Comm. 281, 1796-1805, 2008.
- C. Xu and W. R. Zipfel "Multiphoton excitation of fluorescent probes" in "Handbook of biomedical Nonlinear Microscopy" (B. Masters and P. So Ed., Oxford University Press), 311-333, 2008.
- J. Van Howe, J. Hansryd and C. Xu 2004 Novel multi-wavelength pulsed source with time lens compression (Opt. Lett., 29, 1470-1472)
- J. Hansryd, J. Van Howe, and C. Xu 2004 Nonlinear cross-talk and compensation in QDPASK optical transmission (IEEE Photon. Technol. Lett., 16, 1975-1977)
- Xu, C., X. Liu and X. Wei 2004 Modulation formats for high spectral efficiency fiber optic communications (IEEE J. of Select Topics in Quantum Electron., 10, 281-293, invited review).
- J. Hansryd, J. Van Howe, and C. Xu 2004 Post-nonlinearity compensation in DPSK optical transmission (IEEE Photon. Technol. Lett., in press)
- X. Liu, C. Xu and X. Wei 2004 Performance analysis of time/polarization multiplexed 40-Gb/s RZ-DPSK DWDM transmission, (IEEE Photon. Technol. Lett., 16, 302-304).
- Chris Xu and Xiang Liu 2003 Photonic analog-to-digital converter using soliton self-frequency shift and interleaving spectral filters (Opt. Lett., 28, 986-988)
- Chris Xu, Xiang Liu, Linn Mollenaur, and Xing Wei 2003 Comparison of phase shift keying and on-off-keying in long haul dispersion managed transmission, (IEEE Photon. Technol. Lett. 15, 617-619)
- Xing Wei, Xiang Liu, and Chris Xu 2003 Numerical simulation of the SPM penalty in a 10-Gb/s RZ-DPSK system (IEEE Photon. Technol. Lett., 15, 1636-1638)
- C. J. McKinstrie, C. Xie and C. Xu 2003 Effects of cross-phase modulation on phase jitter in soliton

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