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OCSim Modules

Fiber Optic Communication Systems Simulations

Advanced Software Modules with Matlab

List of Selected Publications wherein OCSim Modules used for Simulations

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List of Selected Publications wherein OCSim Modules used for Simulations

A Raman-pumped dispersion and nonlinearity compensating fiber for fiber optic communications
E. Bidaki and S. Kumar
IEEE Photonics Journal, vol. 12, No.1, Article Sequence Number: 7200117, **Feb. 2020.**

Adjoint sensitivity analysis approach for the nonlinear Schrodinger equation
M.T. Moghrabi, M.H. Bakr and S. Kumar
Optics Letters, vol. 44, pp. 3940-3943, **2019**

Nonlinear phase noise reduction using digital back propagation and midpoint optical phase conjugation
S. Rahbarfam and S. Kumar
Optics Express, vol. 27, issue 5, pp. 8968-8982, **2019**

Optimal operation conditions for a push-pull dual-ring silicon modulator from a viewpoint of dispersion engineering and linearity
A.P. Knights, Z. Wang and S. Kumar
SPIE Proceedings, vol. 10535, Integrated Optics: Devices, Materials, and Technologies XXII; 105350F, **2018**

Dispersion compensation of fiber optic communication system with direct detection using artificial neural networks (ANNs)
M.T. Moghrabi, S. Kumar and M.H. Bakr
Optical Communications, vol. 409, pp. 109-116, **2018**

Optical back propagation for fiber optic networks with hybrid EDFA Raman amplification
X. Liang and S. Kumar
Optics Express, vol. 25, issue 5, pp. 5031-4043, **2017**

Optical back propagation for compensating nonlinear impairments in fiber optic links with ROADMS

X. Liang and S. Kumar

Optics Express, vol. 24, issue 20, pp. 22682-22692, **2016**

Stochastic interference in a dispersive nonlinear optical fiber system

S. Kumar and J. Shao

Optics Express, vol. 24, issue 5, pp. 5638-5653, **2016**

Signal processing for fiber optic systems

J. Shao and S. Kumar

Recent Patents on Signal Processing, vol. 5, pp. 3- 15, April **2016**

Stochastic interference in a dispersive fiber excited by a partially coherent source

J. Shao and S. Kumar

Optics Express, vol. 23, issue 22, pp. 29163-29173, November **2015**

Correlated digital back propagation based on perturbation theory

X. Liang and S. Kumar

Optics Express, vol. 23, issue 11, pp. 14655-14665, March **2015**

Multistage perturbation theory for compensating intra-channel impairments in fiber optic links

X. Liang and S. Kumar

Optics Express, vol. 22, pp. 29733-29745, **2014**

Digital compensation of cross-phase modulation distortions using perturbation technique for dispersion-managed fiber-optic systems

X. Liang, S. Kumar, J. Shao, M. Malekiha and D.V. Plant

Optics Express, vol. 22, Issue 17, pp. 20634-20645, **2014**

Analytical modeling of XPM in dispersion-managed coherent fiber-optic systems

X. Liang and S. Kumar

Optics Express, vol. 22, Issue 9, pp. 10579-10592, **2014**

Analytical modeling of cross-phase modulation in coherent fiber optic systems

S.N. Shahi, S. Kumar and X. Liang

Optics Express, vol. 22, pp. 1426-1439, **2014**

Impulse response of nonlinear Schrodinger equation and its implications for pre-dispersed fiber optic systems

S. Kumar, J. Shao and X. Liang

Optics Express, vol. 22, pp. 32282-32292, **2014**

Analytical modeling of cross-phase modulation in coherent fiber optic systems

X. Liang and S. Kumar

Optics Express, vol. 22, Issue 9, pp. 10579-10592, **2014**

Comparison of split-step Fourier schemes for simulating fiber optic systems

J. Shao, S. Kumar and X. Liang

IEEE Photonics Journal, vol. 6, no. 4, 7200515, August **2014**

Optical back propagation with optimal step size for fiber optic transmission systems

S. Kumar and J. Shao

IEEE Photonics Technology Letters, vol. 25, pp. 523-526, **2013**

Digital back propagation with optimal step size for polarization multiplexed transmission

J. Shao, S. Kumar and X. Liang

IEEE Photonics Technology Letters, vol. 25, pp. 2325-2330, **2013**

Ideal optical backpropagation of scalar NLSE using dispersion-decreasing fibers for WDM transmission

X. Liang, S. Kumar and J. Shao,

Optics Express, vol. 21, pp. 28668-28675, **2013**

Optical back propagation with optimal step size for fiber optic transmission systems

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Comparison of optical back propagation schemes for fiber-optic communications

M. Malekiha, D. Yang and S. Kumar

Optical Fiber Technology, vol. 19, pp.4-9, **2013**

Analytical modeling of single channel nonlinear fiber optic system based on QPSK

S. Kumar, S.N. Shahi and D. Yang

Optics Express, vol. 20, pp. 277740-27755, **2012**

Optical backpropagation for fiber optic communications using optical phase conjugation at the receiver

J. Shao and S. Kumar

Optics Letters, vol. 37, pp. 3012-3014, **2012**

Optical backpropagation for fiber-optic communications using highly nonlinear fibers

S. Kumar and D. Yang

Optics Letters, vol. 36, pp. 1038-1040, **2011**

A fiber optic transmission system based on differential polarization shift keying

Z. Chen and S. Kumar

Optics Communications, vol. 284, pp. 4064-4069, **2011**

Nonlinear phase noise in coherent optical OFDM transmission systems

X. Zhu, and S. Kumar

Optics Express, vol. 18, no. 7, pp. 7347-7360, **2010**

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