

References

- [1] Peter Pepeljugoski, Steven E. Glowich, A. John Ritcher, Paul Kolesar and Alesandar Risteski, "Modeling and simulation of next-generation multimode fiber links", *Journal of Lightwave Technology*, vol. 21, no 5, pp. 1242-1255, May 2003.
- [2] Ketan M. Patel, "Spatially resolved equalization: a new concept in intermodal dispersion compensation for multimode fiber", *PhD thesis, School of Electrical and Computer Engineering, Georgia Institute of Technology*, pp. 1-56, July 2004.
- [3] Levitan, "System simulation of mixed-signal multi-domain Microsystems", *IEEE Transactions on computer-aided design of integrated circuits and systems*, vol. 22, no. 2, pp. 146-147, February 2003.
- [4] Gion Sialm, Daniel Lenz, Daniel Erni, Gian-Luca Bona, Christian Kromer, Marc Xavier Jungo, Thomas Morf, Frank Ellinger and Heinz Jackel, "Comparison of simulation and measurement of dynamic fiber-coupling effects for high-speed multimode VCSELS", *Journal of Lightwave Technology*, vol. 23, no 7, pp. 2318-2323, July 2005.
- [5] G. Yabre, "Comprehensive theory of dispersion in graded index optical fibers", *Journal of Lightwave Technology*, vol. 18, no 2, pp. 166-176, February 2000.
- [6] Denis Donlagic, "Opportunities to enhance multimode fiber links by application of overfilled launch", *Journal of Lightwave Technology*, vol. 23, no.11, pp. 3526-3540, November 2005.
- [7] Pieter Matthijsse, Denis Molin, Frans Gooijer and Gerard Kuyt, "On the design of wide bandwidth window multimode fibers", *Proc. International Wire & Cable Symposium*, pp. 332-337, November 13-16, 2005
- [8] Marc Xavier Jungo, Daniel Erni and Werner Bachtold, "VISTAS: A comprehensive system-oriented spatiotemporal VCSEL model", *IEEE journal of selected topics in quantum electronics*, vol. 9, no. 3, pp. 939-947, May/June 2003.
- [9] Peter Pepeljugoski, Michael J. Hackert, John S. Abbott, Steven E. Sawnsen, Steven E. Golowich, A. John Ritcher, Paul Kolesar, Ye C. Chen and Peter Pleunis, "Development of system specification for laser-optimized 50- μm multimode fiber

- for multigigabit short-wavelength LANs”, *Journal of Lightwave Technology*, vol. 21, no. 5, pp. 1256-1275, May 2003.
- [10] J. Schlager, M. Hackert, P. Pepeljugoski and Gwinn, “Measurement for enhanced bandwidth performance over 62.5- μ m multimode fiber in short-wavelength local area networks”, *Journal of Lightwave Technology*, vol. 21, no. 5, pp. 1276-1285, May 2003.
- [11] Peter Pepeljugoski, Daniel Kuchta, Young Kwark, Peter Pleunis and Generd Kuyt, “15.6 Gb/s transmission over 1 km of next generation multimode fiber”, *IEEE photonics technology letter*, vol. 14, no. 5, pp. 717-719, May 2002.
- [12] Rick Pimpinella and Al Brunsting, “Differential mode delay for multimode fiber types and its relationship to measured performance”, *OFC/NFOEC conference*, 2005 technical proceedings.
- [13] Ning Guan, Katsuhiko, Shoichiro Mastuo and Kuniharu Himeno, “Multimode fibers for compensating intermodal dispersion of graded-index multimode fibers”, *Journal of Lightwave Technology*, vol. 22, no. 7, pp. 1714-1718, July 2004.
- [14] R. Olshansky and D.B. Keck, “Pulse broadening in graded-index optical fibers”, *Appl. Opt.*, vol. 15, pp. 483-491, February 1976.
- [15] D. Richman, “Future of TV may come to you through internet”, *Seattle Post-Intelligencer*, September 1999.
- [16] J. A. Tatum, J. K. Guenter and R. H. Johnson, “Manufacturability of VCSEL components and VCSEL products”, *Proc. LEOS 1998*, vol. 2, pp. 409-410, 1998
- [17] Christopher T. Di Minico and Bruce Tolley, “Preparing Infrastructure for 10 Gigabit Ethernet Applications”, *Cable Design Technologies (CDT) Corporation, and Cisco Systems*.
- [18] J. A. Tatum, “The VCSEL are coming”, *Proceedings of the SPIE 2002*, vol. 4905, pp 517-526, 2002.
- [19] J. A. Tatum, “Packaging flexibility propels VCSELs beyond telecommunications”, *Laser Focus World*, vol. 36, pp. 131-136, April 2000.
- [20] J. G. Shinal A. Reinhart, “The words most glamorous cottage industry”, *Business Week*, October 9, 2000.
- [21] G. A. Bara and R. K. Smith., “Nonadiabatic semiconductor laser rate equations for the large-signal, rapid-modulation regime”, *Physical Review A*, 61(4), 2000.

- [22] M. J. Adams, "An Introduction to Optical Waveguides", *John Wiley & Sons, Inc.*, New York, 1981.
- [23] M. Brunner, "Design and Characterization of Single and Dual Cavity Oxide Apertured VCSELs", *Ph.D. dissertation, Ecole Polytechnique Federale Lausanne, Lausanne, Switzerland*, 2000.
- [24] T. P. Kurzweg, S. P. Levitan, J. A. Martinez, P. J. Marchand, and D. M. Chiarulli, "Diffractive optical propagation techniques for a mixed-signal CAD tool", *Proc. Optics in Computing (OC2000)*, Quebec City, CA, June 18–23, 2000, pp. 610–618.
- [25] J.W. Goodman, *Introduction to Fourier Optics*, second edition. New York: McGraw-Hill, 1996.
- [26] N. Delen and B. Hooker, "Free-space beam propagation between arbitrarily oriented planes based on full diffraction theory: A fast Fourier transform approach," *JOSA*, vol. 15, no. 4, pp. 857–867, Apr. 1998.
- [27] J. C. Maxwell, *A Treatise on Electricity and Magnetism*, Dover, 1954.
- [28] J. A. Buck, *Fundamentals of Optical Fibers*, John Wiley & Sons, 1995.
- [29] C. Pollock, *Fundamentals of Optoelectronics*, Irwin, 1995.
- [30] R. Olshansky and D. B. Keck, "Pulse broadening in graded-index optical fibers," *Appl. Opt.*, vol. 15, pp. 483–491, Feb 1976.
- [31] D. Gloge, "Propagation effects in optical fiber," *IEEE Trans. Microwave Theory Tech.*, vol. 23, pp. 106–120, Jan 1975.
- [32] J. A. Buck, *Fundamentals of Optical Fibers*, John Wiley & Sons, 1995.
- [33] D. Gloge and E. Marcatili, "Multimode theory of graded-core fibers," *Bell Syst. Tech. J.*, vol. 52, pp. 1563–1578, Nov 1973.
- [34] R. Michalzik, G. Giaretta, K. Goossen, K. Walker, and M. Nuss, "40 Gb/s coarse WDM data transmission with 825 nm wavelength VCSEL's over 310 m multimode fiber," in *Proc. ECOC*, Munich, Germany, Sept. 3–7, 2000, pp. 33–34.
- [35] R. Michalzik, G. Giaretta, A. J. Ritger, and Q. L. Williams, "10 Gb/s VCSEL based data transmission over 1.6 km of new generation 850 nm multimode fiber," in *Proc. IEEE LEOS Annu. Meeting, LEOS '99*, San Francisco, CA, Nov. 1999, Postdeadline Paper PD1.6
- [36] "FOTP-220: Differential Mode Delay Measurement of Multimode Fiber in the Time Domain," *TIA/EIA Standards Document*, TIA/EIA 455-220-A, January 2003.

- [37] L. Raddats, I. H. White, D. G. Gunningham and M. C. Nowell, "An experimental and theoretical study of the offset launch technique for the enhancement of the bandwidth of multimode fiber links", *J. Lightwave Technology*, vol. 16, 324-331 (1998).
- [38] G. Yabre, "Influence of core diameter on the 3-dB bandwidth of graded-index optical fibers," *J. Lightwave Technology*, vol. 18, pp. 668-676, May 2000.
- [39] K. Okamoto and T. Okoshi, "Analysis of wave propagation in optical fibers having core with α -power refractive-index distribution and uniform cladding," *IEEE Transactions Microwave Theory Technology*, vol. MTT-24, no. 7, pp. 416-421, Mar. 1976.
- [40] M. Jungo, "VISTAS," [Online]. Available: <http://www.ifh.ee.ethz.ch/~jungo/VISTAS.shtml>.
- [41] "Laser Diodes", *Wikipedia, the free encyclopedia*, http://en.wikipedia.org/wiki/Laser_Diode
- [42] Matthias Streiff, "Opto-Electro- Thermal VCSEL Device Simulation" , *Thesis*, Swiss Federal Institute of Technology, Zurich, 2004.
- [43] "Laguerre polynomials" *Wikipedia, the free encyclopedia*, http://en.wikipedia.org/wiki/Laguerre_polynomials.
- [44] T Ackemann, S Barland, M Cara, S Balle, J R Tredicce, R Jäger, M Grabherr, M Miller and K J Ebeling, "Spatial mode structure of bottom-emitting broad-area vertical-cavity surface-emitting lasers", *J. Opt. B: Quantum Semiclass*, Volume 2, Number 3, June 2000, pp 406-412.
- [45] Eduardo Cabrera, Sonia Melle, Oscar G. Calderon and J. M. Guerra, "Evolution of the Correlation between Orthogonal Polarization Patterns in Broad-Area Lasers", *Physical Review Letters*, December 2006.

