



Project: FP7-258033 MODE-GAP

Multi-mode capacity enhancement with PBG fibre

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Project completion date: 31st March 2015

Project technical publications list

List of MODE-GAP publications in technical journals and conferences.

1. "OFDM MMF optical communication transmission system based on mode group division multiplexing", H. Chen, H.P.A. van den Boom and A.M.J. Koonen, Proceedings of the 15th Annual Symposium of the IEEE Photonics Benelux Chapter, 18-19 November 2010, Delft, The Netherlands (pp. 97-100).
2. "Experimental Demonstration of 2x2 MIMO Based on Mode Group Division Multiplexing over 250m GI-MMF", H. Chen, H.P.A. van den Boom and A.M.J. Koonen, Asia Communications and Photonics Conference and Exhibition (ACP) 2010, FO2, 09-13, December 2010, Shanghai, China.
3. "30Gbit/s 3×3 Optical Mode Group Division Multiplexing System with Mode-Selective Spatial Filtering" H. S. Chen, H. P. A. van den Boom and A. M. J. Koonen, OFC 2011, March 6-10, Los Angeles, paper OWB1.
4. "Capacity Limits of Optical Based Communications" Jian Zhao, Andrew D. Ellis, and Danish Rafique. Signal Processing in Photonics Communications Conference (SPPCom), 12th - 15th June 2011.
5. "High capacity mode group division multiplexed multimode fibre systems" A.M.J. Koonen, H. Chen, H.P.A. van den Boom, E. Tangdiongga, OECC 2011, 4-8 July, 2011, Kaohsiung, paper 8E1.1 (invited)
6. "First demonstration of multimode amplifier for spatial division multiplexed transmission systems," Y.Jung, S.-U.Alam, Z.Li, A.Dhar, D.Giles, I.Giles, J.Sahu, L.Grüner-Nielsen, F.Poletti, D.J.Richardson, ECOC Geneva, Switzerland 18-22 September 2011 Th.13.K.4 (Postdeadline)
7. 'Component challenges: Space Division Multiplexed fibre networks for next generation transmission' I.P.Giles, ECOC Forum ECOC 2011.
8. "30Gbit/s 3×3 Optical Mode Group Division Multiplexing System with Optimized Joint Detection" Chen, H.S.; van den Boom, H.P.A.; Koonen, A.M.J.; , 30-Gb/s 3×3 Optical Mode Group-Division-Multiplexing System With Optimized Joint Detection, Photonics Technology Letters, IEEE , vol.23, no.18, pp.1283-1285, Sept.15, 2011.
9. "Capacity in Fibre Optic Communications: The Case for a Radically New Fibre", A.D.Ellis, D.Rafique, S.Sygletos, IEEE Photonics Conference 2011, paper TuN1 (2011).
10. "Implementation of Tbit/s Networks", A.D.Ellis, F.C.G.Gunning, IEEE Photonics Conference 2011, Special Symposium on Terabit Optical Ethernet, paper MW3, (2011)
11. "First Demonstration and Detailed Characterization of a Multimode Amplifier for Space Division Multiplexed Transmission Systems," Y. Jung, S. Alam, Z. Li, A. Dhar, D. Giles, I.P. Giles, J.K. Sahu, F. Poletti, L. Grüner-Nielsen and D. J. Richardson,, Optics Express 2011 Vol.19(26) pp.B952-B957
12. "Effects on MIMO-DSP in coherent transmission systems employing few-mode fibers", R.G.H. van Uden, H. Chen, C.M. Okonkwo, H.P.A. van den Boom, H. de Waardt, A.M.J. Koonen, Proc. of the 16th Annual symposium of the IEEE Photonics Benelux Chapter, 01-02 Dec. 2011, Ghent, Belgium. (pp. 217-220)
13. Implementation of Tbit/s Networks, A.D.Ellis, F.C.G.Gunning, IEEE Photonics Conference 2011, Special Symposium on Terabit Optical Ethernet, paper MW3, (2011)
14. Capacity in Fibre Optic Communications: The Case for a Radically New Fibre, A.D.Ellis, D.Rafique, S.Sygletos, IEEE Photonics Conference 2011, paper TuN1 (2011).
15. Experimental and Theoretical Investigations of Intensity-Modulation and Direct-Detection Optical Fast-OFDM over MMF-links, E. Giacomidis, S. K. Ibrahim, J. Zhao, J. M. Tang, A. D. Ellis, I. Tomkos, IEEE Photonics Technology Letters, Vol. 24, No. 1, pp.52-54, (2012).
16. Nonlinear Semi-Analytical Model for Simulation of Few-Mode Fiber Transmission, Filipe Ferreira, Sander Jansen, Paulo Monteiro and Henrique Silva, PTL, Vol. 24, No. 4, Feb 15, 2012, pp 240-242.
17. Enhancing optical communications with brand new fibers, T.Morioka, Y.Awaji, R.Ryf, P.Winzer, D.J.Richardson, F.Poletti, IEEE Communications Magazine 2012 Vol.50(2) pp.s31-s42
18. Hollow Core Photonic Bandgap fibers for Telecommunications: Opportunities and Potential Issues, Francesco Poletti, Eric Numkam Fokoua, Marco N. Petrovich, Natalie V. Wheeler, Naveen Baddela, John R. Hayes, and David J. Richardson, OFC 2012 paper OTh1H.3
19. Dipole radiation model for surface roughness scattering in hollow-core fibers, E.Numkam, F.Poletti, D.J.Richardson, OFC '12, JW2A.18 (poster, grand prize winner of the 2012 Corning Outstanding Student Paper competition)
20. Wide-bandwidth, low-loss, 19-cell hollow core photonic band gap fiber and its potential for low latency data, N. V. Wheeler, M. N. Petrovich, R. Slavik, N. Baddela, E. Numkam, J. R. Hayes, D. R. Gray, F. Poletti and D. J. Richardson, OFC 2012 paper PDP5A.2
21. Few Mode Transmission Fiber with low DGD, low Mode Coupling and low Loss, L. Grüner-Nielsen, Y. Sun, J. W. Nicholson, D. Jakobsen, R. Lingle Jr, and B. Pálsdóttir, OFC 2012 paper PDP5A.1

22. *Detailed study of modal gain in a multimode EDFA supporting LP01 and LP11 mode group amplification*, Y.Jung, S.-U.Alam, Z.Li, A.Dhar, D.Giles, I.Giles, J.K.Sahu, F.Poletti, D.J.Richardson, OFC 2012, paper OM3C.4
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24. *Experimental Demonstration of Cost-Effective Intensity-Modulation and Direct-Detection Optical Fast-OFDM over 40km SMF Transmission*, E. Giacomidis, S.K. Ibrahim, J. Zhao, J.M. Tang, I. Tomkos, and A.D. Ellis, OFC 2012, paper JW2A.65, (2012).
25. *The Impact of Differential Mode Delay on Mode-Division Multiplexed Coherent Optical OFDM Transmission*, Adriana P. Lobato Polo, Filipe Ferreira, Beril Inan, Maxim Kuschnerov, Dirk van den Borne, Sander L. Jansen, Bernhard Spinnler, Berthold Lankl, OFC 2012, paper OTu2C.2.
26. *Equalizer Complexity of Mode Division Multiplexed Coherent Receivers*, Beril Inan, Bernhard Spinnler, Filipe Ferreira, Adriana P. Lobato Polo, Susmita Adhikari, Vincent Sleiffer, Dirk van den Borne, Norbert Hanik, Sander L. Jansen, OFC 2012, paper OW3D.4
27. *Crosstalk Optimization of Phase Masks for Mode Multiplexing in Few Mode Fibers*, Filipe Ferreira, Dirk van den Borne, Paulo Monteiro, Henrique Silva, OFC 2012, paper JW2A.37
28. *30-Gb/s Bidirectional Transparent Optical Transmission With an MMF Access and an Indoor Optical Wireless Link*, Haoshuo Chen, Henrie P. A. van den Boom, Eduward Tangdionga, Ton Koonen, IEEE Photonics Technology Letters, Vol. 24, No. 7, April 1, 2012 pp 572-574.
29. *In0.75Ga0.25As/InP Multiple Quantum Well Discrete Mode Laser Diode Emitting at 2 μm* , R. Phelan, J. O'Carroll, D. Byrne, C. Herbert, J. Somers, B. Kelly, Photonics Technology Letters, Vol. 24, No. 8, pp 652-654.
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33. *Capacity Limits of Optical Fibre Based Communications*, Jian H. Lin, Andrew Ellis, and Danish Rafique, Proc Signal Processing in Photonic Communications (SPPCom), Toronto, Canada, Paper SPWC2, (Jun. 2011).
34. *Development of low loss, wide bandwidth hollow core photonic bandgap fibres for telecom applications*, Petrovich, M. N.; Wheeler, N. V.; Baddela, N. K.; Poletti, F.; Fokoua, E. Numkam; Hayes, J. R.; Gray, D. R.; Richardson, D. J., 2012 14th International Conference on Transparent Optical Networks (ICTON) 2012
35. *Equalizer complexity of mode-division multiplexed coherent receivers*, Inan, B., Spinnler, B., van den Borne, D., Ferreira, F., Lobato, A., Adhikari, S., Sleiffer, V.A.J.M., Hanik, N., Jansen, S.L., 14th International Conference on Transparent Optical Networks (ICTON), 2-5 July 2012, pages 1 – 4
36. *Semi-analytical model for linear modal coupling in few-mode fiber transmission*, F. Ferreira, P. Monteiro, H. Silva, 14th International Conference on Transparent Optical Networks (ICTON), 2-5 July 2012, paper Th.A1.5
37. *20Gbit/s Two LP11 Modes Transmission over 10km Two-moded Fiber without Crosstalk Compensation*, H. -S. Chen, A. M. J. Koonen, B. Corbett, R. Winfield, and H. P. A. van den Boom, OECC'12, paper 6B2-1.
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40. *All Fiber Components for Multimode SDM Systems*, I. Giles, A. Obeysekara, R. Chen, D. Giles, F. Poletti and D. J. Richardson, SUM 2012 IEEE Photonics Society Summer Topical Meeting on Space Division Multiplexing for Optical Systems and Networks, paper WC1.1 (Invited).
41. *Modal Gain Equalization in a Few Moded Erbium-Doped Fiber Amplifier*, S.-U. Alam, Y. Jung, Z. Li, A. Dhar, J. K. Sahu, F. Poletti and D. J. Richardson, SUM 2012 IEEE Photonics Society Summer Topical Meeting on Space Division Multiplexing for Optical Systems and Networks, paper WC2.1 (Invited)

42. *Measuring Distributed Mode Scattering in Few Mode Fibers with High and Low Differential Group Delay*, L. Grüner-Nielsen, J.W. Nicholson, K. Jespersen, Y. Sun, R. L. Lingle, D. Jakobsen and B. Pálsdóttir, Proceedings of IEEE Photonics Society 2012 Summer topical meeting, paper TuC1.3.
43. *Stable Mode Converter for Conversion between LP₀₁ and LP₁₁ Using a Thermally Induced Long Period Grating*, L. Grüner-Nielsen, J. W. Nicholson, SUM 2012 IEEE Photonics Society Summer Topical Meeting on Space Division Multiplexing for Optical Systems and Networks, paper WC1.2
44. *Silicon Photonic Integrated Mode Multiplexer*, A.M.J. Koonen, H.-S. Chen, H.P.A. van den Boom and O. Raz, IEEE Summer Topical Meeting 2012, Paper WC4.2. (WP4)
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47. *High speed AllnGaAs quantum well waveguide photodiode for wavelengths around 2 microns*, Hua Yang, Nan Ye, Agnieszka Gocalinska, Marina Manganaro, Kevin Thomas, Emanuele Pelucchi, Brendan Roycroft, Frank Peters and Brian Corbett, IPRM 2012, paper We2D4
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53. *Modal Gain Control in a Multimode Erbium Doped Fiber Amplifier Incorporating Ring Doping*, Qiongyue Kang, Eeleong Lim, Yongmin Jung, Jayanta Sahu, Francesco Poletti, Shaif-ul Alam, David Richardson, ECOC 2012, paper P1.05
54. *Mode division multiplexed 3x112-Gb/s DP-QPSK transmission over 80-km few-mode fiber with inline MM-EDFA and blind DSP*, V.A.J.M. Sleiffer, Y. Jung, B.Inan, H. Chen, R.G.H. van Uden, M. Kuschnerov, D. van den Borne, S.L. Jansen, V. Veljanovski, A.M.J. Koonen, D.J. Richardson, S. Alam, F. Poletti, J. Sahu, A. Dhar, B. Corbett, R. Winfield, A. Ellis, H. De Waardt, ECOC 2012, paper TU1C2.
55. *1.45 Tbit/s low latency data transmission through 19-cell hollow core photonic band gap fibre*, R.Slavik, M.N.Petrovich, N.V.Wheeler, J.R.Hayes, N.K.Baddela, D.Gray, F.Poletti, D.J.Richardson, European Conference on Optical Communication (ECOC) Amsterdam 16-20 Sept 2012 paper Mo.2.F.2
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