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## João Lopes Rebola

### Professor Associado

Instituto de Telecomunicações - IUL  
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### Contacts

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### Research Interests

Optical Fiber Communications

Optical Communications System Modelling

### Academic Qualifications

University/Institution	Type	Degree	Period
Universidade de Lisboa Instituto Superior Técnico	PhD	Engenharia Electrotécnica e de Computadores	2004
Instituto Superior Técnico - UTL	Licenciante	Engenharia Electrotécnica e de Computadores	1999

## Teaching Activities

Teaching Year	Sem.	Course Name	Degree(s)	Coord
2025/2026	2º	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes
2025/2026	2º	Optical Communication Systems	Bachelor Degree in Telecommunications and Computer Engineering;	No
2025/2026	1º	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes
2024/2025	2º	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes
2024/2025	2º	Optical Communication Systems	Bachelor Degree in Telecommunications and Computer Engineering;	No
2024/2025	1º	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes
2023/2024	2º	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes
2023/2024	2º	Optical Communication Systems	Bachelor Degree in Telecommunications and Computer Engineering;	No
2023/2024	1º	Fundamentals of Computer Architecture	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering;	No
2023/2024	1º	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes
2022/2023	2º	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes
2022/2023	2º	Optical Communication Systems	Bachelor Degree in Telecommunications and Computer Engineering;	No
2022/2023	1º	Fundamentals of Computer Architecture	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Telecommunications and Computer Engineering;	No
2022/2023	1º	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes
2021/2022	2º	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes

2021/2022	2°	Optical Communication Systems	Bachelor Degree in Telecommunications and Computer Engineering;	No
2021/2022	1°	Fundamentals of Computer Architecture	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering; Bachelor Degree in Computer Science and Business Management;	No
2021/2022	1°	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes
2020/2021	2°	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes
2020/2021	2°	Optical Communication Systems	Bachelor Degree in Telecommunications and Computer Engineering;	No
2020/2021	1°	Fundamentals of Computer Architecture	Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Science and Business Management; Bachelor Degree in Telecommunications and Computer Engineering;	No
2020/2021	1°	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes
2019/2020	2°	Advanced Optical Fibre Telecommunication Systems	Institutional Degree in Escola de Tecnologias e Arquitetura;	Yes
2019/2020	2°	Guided Communication Systems		No
2019/2020	1°	Fundamentals of Computer Architecture	Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering; Bachelor Degree in Telecommunications and Computer Engineering;	No
2019/2020	1°	Modulation and Coding	Bachelor Degree in Telecommunications and Computer Engineering;	Yes

## Supervisions

### • Ph.D. Thesis

- Ongoing

	Student Name	Title/Topic	Language	Status	Institution
1	Bruno Rafael Pereira Pinheiro	--	Portuguese	Developing	Iscte
2	Bruno Rafael Pereira Pinheiro	Inter-core crosswalk limitations in coherent detection multicore fiber-based transmission systems	English	Developing	Iscte

• **M.Sc. Dissertations**

- **Ongoing**

	<b>Student Name</b>	<b>Title/Topic</b>	<b>Language</b>	<b>Status</b>	<b>Institution</b>
1	Rodrigo Domingues Matias	Routing, spectrum, modulation format and core assignment in multi-core fiber optical networks with bidirectional transmission	--	Developing	Iscte
2	João Luís Pereira Macedo	Study of intercore crosstalk in multicore fibers deployed in stressful physical environments targeting short-reach applications	--	Developing	Iscte
3	Maria Magro Vinheiras	Assessment of reach of a deployed multi-core fiber in a stressful physical environment with bidirectional transmission	--	Developing	Iscte
4	Gonçalo Alfredo da Cruz Cardoso Lobato	Spatial cross-connect architectures for high-capacity SDM optical networks	--	Developing	Iscte
5	Catarina da Silva Costa Vieira Jara	ROADM architectures for future high-capacity SDM/MB optical networks	--	Developing	Iscte
6	Mariana Silva Marques	Physical layer modelling in future SDM/MB optical networks	--	Developing	Iscte

- **Concluded**

	<b>Student Name</b>	<b>Title/Topic</b>	<b>Language</b>	<b>Institution</b>	<b>Concluding Year</b>
1	Tomás Isidro Martins	High core-count multi-core fiber design for short-reach optical links	English	Iscte	2025
2	André Filipe Aldeinhas Ribeiro	Cost-effective ROADM architectures for SDM optical networks	English	Iscte	2024
3	Rodrigo Francisco Guerreiro	GNPy-based planning tool for survivable multi-band optical networks	English	Iscte	2024
4	João Frederico de Almeida Raposo do Ó Ramos	ROADM architectures for multi-band optical networks	English	Iscte	2023
5	Margarida Isabel Carreto Vaz	Exploring ILP and heuristic formulations for planning multiband optical networks	English	Iscte	2022
6	Marco Quiteres da Silva	Impact of physical layer impairments on SDM networks based on ROADM nodes	English	Iscte	2021

7	Filipa Ferreira Gomes	Impact of physical layer impairments on multi-band metro networks	English	Iscte	2021
8	Pedro Afonso Fernandes Fonseca	Graph coloring techniques for planning dynamic optical networks	English	Iscte	2021
9	Sofia Pérsio de Eugénio Esteves	CNN-based eye pattern analysis and BER prediction in PAM4 inter-datacenter optical connections impaired by intercore crosstalk	English	Iscte	2021
10	Inês Ferreira Gomes	Exploring optimal solutions for planning optical networks with graph coloring techniques.	English	Iscte	2021
11	Pedro Daniel Santo Venda	Gaussian noise model for multiband optical networks over the C and L bands	English	Iscte	2021
12	Ana Margarida Filipe Domingues	Capacity Limits of Crosstalk-limited Multi-core Fiber Systems	English	Iscte	2020
13	Inês Maria Leandro Duarte	Exploring Graph Coloring Heuristics for Optical Networks Planning	English	Iscte	2020
14	Diogo Miguel Cigarro Morão	Impact of physical layer impairments on large ROADM architectures	English	Iscte	2020
15	Rafael Alexandre Domingues Dias	Transmission of PAM4 signals in amplified inter-datacenters connections with direct-detection and multicore fibers limited by inter-core crosstalk.	English	Iscte	2020
16	Paulo José da Costa Marinho Pereira	Superchannel transmission over flexible-grid optical networks	English	Iscte	2019
17	Inês Costa Jorge	Transmission of 4-PAM signals in intra-datacenters connections with direct-detection and multicore fibers limited by inter-core crosstalk	English	Iscte	2019
18	Carlos Jorge da Cruz Rodrigues	Optical Network Planning for Static Applications	English	Iscte	2018
19	André Filipe Simões da Silva Marques	Transmission of 5G Signals in Multicore Fibers Impaired by Inter-Core Crosstalk	Portuguese	Iscte	2018
20	Diogo Gonçalo Sequeira	Impact of In-Band Crosstalk in an Optical Network Based on Multi-Degree CDC ROADMs	English	Iscte	2017
21	Hélio Ferreira Paulo Simeão	On the performance of M-QAM optical signals in ROADM based Optical Networks	English	Iscte	2016
22	Gonçalo Miguel da Silva Horta	Planning tool for fiber optic communication systems: Access and Transport network	English	Iscte	2015

23	Bruno Rafael Pereira Pinheiro	Impact of in-band Crosstalk on the performance of PDM-QPSK Optical Communication Systems	English	Iscte	2015
24	Genádio João Faria Martins	Estudo do Impacto do Crosstalk em Sistemas de Comunicação Óptica DPSK com detecção directa através de uma simulação de monte carlo	Portuguese	Iscte	2012

## Total Citations

Web of Science®	316
Scopus	402

## Publications

### • Scientific Journals

#### - Scientific journal paper

1	Guerreiro, R., Cancela, L. & Rebola, J. (2025). Assessing client-side protection impact on C+L+S multi-band optical networks with a GNPY-based planning tool. <i>Optical Fiber Technology</i> . 93
2	Rebola, J. L. & Cartaxo, A. V. T. (2024). A numerical assessment of the effect of concatenating arbitrary uncoupled multicore fiber segments on intercore crosstalk in long-haul communication links. <i>Photonics</i> . 11 (10)
3	Rebola, J. L. & Cartaxo, A. V. T. (2024). Statistical characterization of the effect of random core loss on the intercore crosstalk in long-haul uncoupled multicore fiber links. <i>Optics Express</i> . 32 (15), 26069-26081 - Times Cited Web of Science®: 2 - Times Cited Scopus: 2 - Times Cited Google Scholar: 2
4	Ramos, J. F. Ó., Cancela, L. & Rebola, J. (2024). Impact of the reconfigurable optical add-drop multiplexer architecture on the design of multi-band C+L+S optical networks. <i>Optical Fiber Technology</i> . 85 - Times Cited Web of Science®: 2 - Times Cited Scopus: 4 - Times Cited Google Scholar: 4
5	Venda, P., Rebola, J. & Cancela, L. (2022). Assessing the quality of transmission of lightpaths in multiband C+L networks through Gaussian noise models. <i>Optical Fiber Technology</i> . 74 - Times Cited Web of Science®: 1 - Times Cited Scopus: 2 - Times Cited Google Scholar: 2
6	Alves, T. M. F. , Cartaxo, A. & Rebola, J. (2022). DD-OOK multicore fiber systems impaired by intercore crosstalk and laser phase noise. <i>Journal of Lightwave Technology</i> . 40 (5), 1544-1551 - Times Cited Web of Science®: 6 - Times Cited Scopus: 4 - Times Cited Google Scholar: 6

7	<p>Dias, R., Rebola, J. &amp; Cartaxo, A. (2021). Outage probability due to crosstalk from multiple interfering cores in PAM4 inter-datacenter connections. <i>Photonics</i>. 8 (1)</p> <p>- Times Cited Scopus: 1</p> <p>- Times Cited Google Scholar: 3</p>
8	<p>Rebola, J., Tiago M. F. A. &amp; Cartaxo, A. (2021). Outage probability due to intercore crosstalk from multiple cores in short-reach networks. <i>IEEE Photonics Technology Letters</i>. 33 (6), 281-284</p> <p>- Times Cited Web of Science®: 5</p> <p>- Times Cited Scopus: 3</p> <p>- Times Cited Google Scholar: 6</p>
9	<p>Pinheiro, B. R. P., Rebola, J. L. &amp; Cartaxo, A. V. T. (2021). Analysis of inter-core crosstalk in weakly-coupled multi-core fiber coherent systems. <i>Journal of Lightwave Technology</i>. 39 (1), 42-54</p> <p>- Times Cited Web of Science®: 13</p> <p>- Times Cited Scopus: 11</p> <p>- Times Cited Google Scholar: 20</p>
10	<p>Sequeira, D. G., Cancela, L. &amp; Rebola, J. (2021). CDC ROADM design tradeoffs due to physical layer impairments in optical networks. <i>Optical Fiber Technology</i>. 62</p> <p>- Times Cited Web of Science®: 8</p> <p>- Times Cited Scopus: 8</p> <p>- Times Cited Google Scholar: 13</p>
11	<p>Tiago M. F. Alves, Cartaxo, A. &amp; Rebola, J. (2020). Stochastic Properties and Outage in Crosstalk-Impaired OOK-DD Weakly-Coupled MCF Applications With Low and High Skew×Bit-Rate. <i>IEEE Journal of Selected Topics in Quantum Electronics</i>. 26 (4), 1-8</p> <p>- Times Cited Web of Science®: 15</p> <p>- Times Cited Scopus: 15</p> <p>- Times Cited Google Scholar: 20</p>
12	<p>Rebola, J., Cartaxo, A., Alves, T. M. F. &amp; Marques, A. S. (2019). Outage probability due to intercore crosstalk in dual-core fiber links with direct-detection. <i>IEEE Photonics Technology Letters</i>. 31 (14), 1195-1198</p> <p>- Times Cited Web of Science®: 20</p> <p>- Times Cited Scopus: 19</p> <p>- Times Cited Google Scholar: 27</p>
13	<p>Rebola, J. L., Cartaxo, A. &amp; Marques, A. S. (2019). 10 Gbps CPRI signals transmission impaired by intercore crosstalk in 5G network fronthauls with multicore fibers. <i>Photonic Network Communications</i>. 37 (3), 409-420</p> <p>- Times Cited Web of Science®: 9</p> <p>- Times Cited Scopus: 9</p> <p>- Times Cited Google Scholar: 12</p>
14	<p>Rebola, J. L. &amp; Cartaxo, A. V. T. (2016). Estimating the performance of DD OFDM optical systems impaired by in-band crosstalk using the moment generating function. <i>Journal of Lightwave Technology</i>. 34 (10), 2562-2570</p> <p>- Times Cited Web of Science®: 2</p> <p>- Times Cited Scopus: 3</p> <p>- Times Cited Google Scholar: 4</p>
15	<p>Cancela, L. G. C., Rebola, J. L. &amp; Pires, J. J. O. (2016). Implications of in-band crosstalk on DQPSK Signals in ROADM-based metropolitan optical networks. <i>Optical Switching and Networking</i>. 19, 135-144</p> <p>- Times Cited Web of Science®: 1</p> <p>- Times Cited Scopus: 2</p> <p>- Times Cited Google Scholar: 4</p>

16	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2014). Analysis of performance assessment of direct-detection OFDM optical receivers with imperfect RF demodulation. <i>IEEE/OSA Journal of Optical Communications and Networking</i>. 6 (2), 180-189</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 2</li> <li>- Times Cited Scopus: 2</li> <li>- Times Cited Google Scholar: 3</li> </ul>
17	<p>Rebola, J. L. &amp; Cartaxo, A. (2012). Moment Generating Function for the Rigorous Performance Assessment of Direct-Detection Baseband OFDM Communication Systems. <i>Journal of Lightwave Technology</i>. 30 (23), 3617-3626</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 4</li> <li>- Times Cited Scopus: 5</li> <li>- Times Cited Google Scholar: 4</li> </ul>
18	<p>Rebola, J. L. &amp; Cartaxo, A. (2012). Bit Error Probability Evaluation in Optically Pre-amplified Direct-Detection OFDM Systems Using the Moment Generating Function. <i>IEEE/OSA Journal of Optical Communications and Networking</i>. 4 (3), 229-237</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 1</li> <li>- Times Cited Scopus: 1</li> <li>- Times Cited Google Scholar: 1</li> </ul>
19	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2007). Accuracy of Gaussian approach for the performance evaluation of direct-detection receiver with partially polarized noise. <i>Fiber and Integrated Optics</i>. 26 (3), 135-146</p>
20	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2006). Analysis and validation of the probability density function of the output current of optically pre-amplified receivers with arbitrary optical filtering through Monte Carlo simulation. <i>Journal of Optical Communications</i>. 27 (5), 242-248</p>
21	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2006). Closed-form expression for arbitrary modulation formats performance evaluation in optically amplified systems. <i>Journal of Optical Communications</i>. 27 (3), 130-136</p> <ul style="list-style-type: none"> <li>- Times Cited Google Scholar: 1</li> </ul>
22	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2005). Performance evaluation of optically pre-amplified receivers with partially polarised noise and arbitrary optical filtering: a rigorous approach. <i>IEE Proceedings: Optoelectronics</i>. 152 (5), 251-262</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 7</li> <li>- Times Cited Scopus: 7</li> <li>- Times Cited Google Scholar: 8</li> </ul>
23	<p>Cartaxo, A. V. T., Rebola, J., Pavlovic, N. P., Charrua, P. M., Fonseca, D. F., Morgado, J.,...Luís, R. S. (2005). Overview of DWDM/ODC project. <i>Fiber and Integrated Optics</i>. 24 (3-4), 331-352</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 1</li> <li>- Times Cited Scopus: 2</li> <li>- Times Cited Google Scholar: 2</li> </ul>
24	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2005). Probability density function of the output current of cascaded multiplexer/demultiplexers in transparent optical networks. <i>Fiber and Integrated Optics</i>. 24 (2), 55-72</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 1</li> <li>- Times Cited Google Scholar: 2</li> </ul>
25	<p>Leiria, M., Rebola, J. &amp; Cartaxo, A. V. T. (2004). Gaussian approach to the performance assessment of optical multiplexer/demultiplexer concatenation in transparent optical networks. <i>IEE Proceedings: Optoelectronics</i>. 151 (3), 157-165</p> <ul style="list-style-type: none"> <li>- Times Cited Web of Science®: 5</li> <li>- Times Cited Scopus: 6</li> <li>- Times Cited Google Scholar: 9</li> </ul>

26	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2003). Q-factor estimation and impact of spontaneous-spontaneous beat noise on the performance of optically preamplified systems with arbitrary optical filtering. <i>Journal of Lightwave Technology</i>. 21 (1), 87-95</p> <p>- Times Cited Web of Science®: 18</p> <p>- Times Cited Scopus: 21</p> <p>- Times Cited Google Scholar: 22</p>
27	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2002). Power penalty assessment in optically preamplified receivers with arbitrary optical filtering and signal-dependent noise dominance. <i>Journal of Lightwave Technology</i>. 20 (3), 401-408</p> <p>- Times Cited Web of Science®: 29</p> <p>- Times Cited Scopus: 32</p> <p>- Times Cited Google Scholar: 50</p>
28	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2002). Performance optimization of Gaussian apodized fiber Bragg grating filters in WDM systems. <i>Journal of Lightwave Technology</i>. 20 (8), 1537-1544</p> <p>- Times Cited Web of Science®: 38</p> <p>- Times Cited Scopus: 46</p> <p>- Times Cited Google Scholar: 50</p>
29	<p>Rebola, J. &amp; Cartaxo, A. V. T. (2001). Gaussian approach for performance evaluation of optically preamplified receivers with arbitrary optical and electrical filters. <i>IEE Proceedings: Optoelectronics</i>. 148 (3), 135-142</p> <p>- Times Cited Web of Science®: 69</p> <p>- Times Cited Scopus: 72</p> <p>- Times Cited Google Scholar: 89</p>

## • Books and Book Chapters

### - Book chapter

1	<p>Pinheiro, B. R., Rebola, J. L. &amp; Cartaxo, A. V. T. (2018). Estimation of the OSNR penalty due to in-band crosstalk on the performance of virtual carrier-assisted metropolitan OFDM systems. In <i>Optics, Photonics and Laser Technology</i>. (pp. 47-66). Cham: Springer.</p>
2	<p>Rebola, J., Cancela, L. &amp; Pires, J. (2016). DQPSK Optical Networks Impaired by Multi Line Rates and Mixed Modulation Formats Interferers. In Paulo A. Ribeiro, Maria Raposo (Ed.), <i>Photoptics 2014</i>. (pp. 19-30). Cham, Suíça: Springer International Publishing.</p>

## • Conferences/Workshops and Talks

### - Publication in conference proceedings

1	<p>Rebola, J. &amp; Cartaxo, A. (2025). Optimizing crosstalk suppression in bidirectional weakly-coupled multicore fiber spans by resorting to mid-span isolators. In <i>2025 25th Anniversary International Conference on Transparent Optical Networks (ICTON)</i>. (pp. 1-4). Barcelona, Spain: IEEE.</p>
2	<p>Rebola, J., Cartaxo, A. &amp; Alves, T. (2024). Impact of the combined effect of random core-dependent and splice losses on intercore crosstalk performance in weakly-coupled multicore fibers. In Prudenzeno F., Marciniak M., National Institute of Telecommunications, 1 Szachowa Street, Warsaw (Ed.), <i>International Conference on Transparent Optical Networks</i>. Bari, Italy: IEEE.</p> <p>- Times Cited Scopus: 1</p> <p>- Times Cited Google Scholar: 1</p>

3	<p>Rebola, J. L. &amp; Cartaxo, A. V. T. (2023). Effect of core-dependent loss on the intercore crosstalk in multicore fiber systems with concatenated random loss fiber segments. In Jaworski, M., and Marciniak, M. (Ed.), 2023 23rd International Conference on Transparent Optical Networks (ICTON). Bucharest, Romania: IEEE.</p> <p>- Times Cited Scopus: 4 - Times Cited Google Scholar: 4</p>
4	<p>Alves, T. M. F., Piedade, D., Brandão, T., Rebola, J. L. &amp; Cartaxo, A. V. T. (2023). On the use of Feedforward Neural Networks to improve the intercore crosstalk tolerance in self-coherent MCF systems. In Jaworski, M., and Marciniak, M. (Ed.), 2023 23rd International Conference on Transparent Optical Networks (ICTON). Bucharest, Romania: IEEE.</p> <p>- Times Cited Scopus: 2 - Times Cited Google Scholar: 2</p>
5	<p>Alves, T. M. F., Rebola, J. L. &amp; Cartaxo, A. V. T. (2023). On the degree of polarization of the intercore crosstalk in weakly-coupled multicore fibers. In Dagenais, D. (Ed.), 2023 IEEE Photonics Conference (IPC). Orlando, FL, USA: IEEE.</p>
6	<p>Vaz, M., Cancela, L. &amp; Rebola, J. (2023). Impact of network physical topology on planning multiband optical networks aware of physical layer impairments. In Stanciu, G. (Ed.), 2023 23rd International Conference on Transparent Optical Networks (ICTON) . Bucharest, Romania: IEEE.</p>
7	<p>Ramos, J. F. Ó., Cancela, L. &amp; Rebola, J. (2023). Influence of the ROADM architecture on the cost-per-bit in C+L+S multi-band optical networks. In Stanciu, G. (Ed.), 2023 23rd International Conference on Transparent Optical Networks (ICTON). Bucharest, Romania: IEEE.</p> <p>- Times Cited Web of Science®: 4 - Times Cited Scopus: 10 - Times Cited Google Scholar: 13</p>
8	<p>Rebola, J. L. &amp; Cartaxo, A. V. T. (2023). Statistical dependence of average intercore crosstalk on random loss in long-haul uncoupled MCF links. In Dagenais, D. (Ed.), 2023 IEEE Photonics Conference (IPC). Orlando, FL, USA: IEEE.</p> <p>- Times Cited Web of Science®: 2 - Times Cited Scopus: 2 - Times Cited Google Scholar: 2</p>
9	<p>Esteves, S., Rebola, J. &amp; Santana, P. (2022). Deep learning for BER prediction in optical connections impaired by inter-core crosstalk. In 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP). (pp. 440-445). Porto: IEEE.</p> <p>- Times Cited Web of Science®: 1 - Times Cited Scopus: 3 - Times Cited Google Scholar: 3</p>
10	<p>Venda, P., Rebola, J. &amp; Cancela, L. (2022). Impact of traffic load and spectral occupancy on Gaussian noise models performance for multiband networks. In 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP) . (pp. 240-245). Porto: IEEE.</p> <p>- Times Cited Web of Science®: 2 - Times Cited Scopus: 3 - Times Cited Google Scholar: 4</p>
11	<p>Silva, M. Q., Cancela, L. G. &amp; Rebola, J. L. (2022). Cost, power consumption and performance analysis in SDM ROADM architectures for uncoupled spatial channels. In 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP). (pp. 857-862). Porto: IEEE.</p> <p>- Times Cited Web of Science®: 1</p>

12	<p>Gomes, F., Cancela, L. G. &amp; Rebola, J. L. (2022). Impact of physical layer impairments on C+L-band metro networks. In de Ceglia, D., Raposo, M., Albella, P., &amp; Ribeiro, P. (Ed.), Proceedings of the 10th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2022). (pp. 134-143). Online: SCITEPRESS – Science and Technology Publications, Lda.</p> <p>- Times Cited Scopus: 1 - Times Cited Google Scholar: 1</p>
13	<p>Fonseca, P., Cancela, L. &amp; Rebola, J. (2022). Performance analysis of a graph coloring algorithm for wavelength assignment in dynamic optical networks. In 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP). (pp. 534-539). Porto: IEEE.</p> <p>- Times Cited Web of Science®: 3 - Times Cited Scopus: 3 - Times Cited Google Scholar: 4</p>
14	<p>Gomes, I., Cancela, L. &amp; Rebola, J. (2022). Exploring the tabu search algorithm as a graph coloring technique for wavelength assignment in optical networks. In de Ceglia, D., Raposo, M., Albella, P., &amp; Ribeiro, P. (Ed.), Proceedings of the 10th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2022) . (pp. 59-68). Online: SCITEPRESS – Science and Technology Publications, Lda.</p> <p>- Times Cited Scopus: 2 - Times Cited Google Scholar: 2</p>
15	<p>Cartaxo, A. V. T., Alves, T. M. F. &amp; Rebola, J. L. (2022). ICXT characterization in WC-MCFs and its impact on the performance of OOK-DD systems. In 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP). (pp. 682-685). Porto, Portugal: IEEE.</p>
16	<p>Duarte, I., Cancela, L. &amp; Rebola, J. (2021). Graph coloring heuristics for optical networks planning. In 2021 Telecoms Conference (ConfTELE). Leiria: IEEE.</p> <p>- Times Cited Scopus: 3 - Times Cited Google Scholar: 6</p>
17	<p>Morão, D. C., Cancela, L. G. &amp; Rebola, J. L. (2021). Exploring future large-scale ROADM architectures. In 2021 Telecoms Conference (ConfTELE). Leiria: IEEE.</p> <p>- Times Cited Scopus: 5 - Times Cited Google Scholar: 6</p>
18	<p>Alves, T. M. F. , Rebola, J. L. &amp; Cartaxo, A. V. T. (2021). Weakly-coupled MCF direct-detection OOK systems impaired by laser phase noise. In 2021 Optical Fiber Communications Conference and Exhibition (OFC). San Francisco, CA: IEEE.</p> <p>- Times Cited Web of Science®: 1 - Times Cited Scopus: 1 - Times Cited Google Scholar: 1</p>
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#### - Talk

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2	Rebola, J. & Cartaxo, A. (2023). Statistical Dependence of Average Intercore Crosstalk on Random Loss in Long-haul Uncoupled MCF Links. IEEE Photonics Conference.
3	Vaz, M., Cancela, L. & Rebola, J. (2023). Impact of Network Physical Topology on Planning Multiband Optical Networks Aware of Physical Layer Impairments. ICTON - International Conference on Transparent Optical Networks.
4	Ramos, J., Cancela, L. & Rebola, J. (2023). Influence of the ROADM architecture on the cost-per-bit in C+L+S multi-band optical networks. ICTON - International Conference on Transparent Optical Networks.
5	Gomes, F., Cancela, L. & Rebola, J. (2022). Impact of Physical Layer Impairments on C+L-band Metro Networks. 10th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2022).
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7	Silva, M., Cancela, L. & Rebola, J. (2022). Cost, power consumption and performance analysis in SDM ROADM architectures for uncoupled spatial channels. 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP) .
8	Fonseca, P., Cancela, L. & Rebola, J. (2022). Performance analysis of a graph coloring algorithm for wavelength assignment in dynamic optical networks. 2022 13th International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP) .
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10	Tiago M. F. Alves, Cartaxo, A. & Rebola, J. (2021). Intercore Crosstalk in Direct Detection Weakly Coupled Multicore Fiber Systems. EXAT Symposium.
11	Morão, D., Cancela, L. & Rebola, J. (2021). Exploring future large-scale ROADM architectures. Conftele 2021.
12	Duarte, I., Cancela, L. & Rebola, J. (2021). Graph Coloring Heuristics for Optical Networks Planning. Conftele 2021.
13	Tiago M. F. Alves, Rebola, J. & Cartaxo, A. (2020). Stochastic ICXT Fluctuations and Performance of Weakly-Coupled Multicore Fiber Short-Reach Systems. IEEE Photonics Society Summer Topicals Meeting Series.
14	Paulo J. Pereira, Rebola, J. & Cancela, L. (2020). Procedure to optimize the intercarrier spacing in superchannels impaired by the cascading of WSS-based ROADMs. Procedure to optimize the intercarrier spacing in superchannels impaired by the cascading of WSS-based ROADMs.
15	Jorge, Inês Costa, Rebola, J. & Cartaxo, A. (2020). Transmission of PAM4 Signals in ICXT-impaired Intra-datacenter Connections with PAM2 Signal Interference. Photoptics. - Times Cited Scopus: 2
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19	<p>Diogo Sequeira, Cancela, L. &amp; Rebola, J. (2018). Impact of Physical Layer Impairments on Multi-Degree CDC ROADM-based Optical Networks. ONDM 2018 - 22nd Conference on Optical Network Design and Modelling.</p>
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21	<p>Rebola, J. &amp; A. V. T. Cartaxo (2016). On the use of the Gaussian approach for the performance evaluation of direct-detection OFDM receivers impaired by in-band crosstalk. 21st European Conference on Networks and Optical Communications - NOC 2016.</p>
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26	<p>B. Pinheiro, Rebola, J. &amp; Cancela, L. (2015). Impact of In-Band Crosstalk Signals with Different Duty-Cycles in M-QAM Optical Coherent Receivers. European Conference on Network and Optical Communications (NOC 2015). ---</p>
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28	<p>Rebola, J., Cancela, L. &amp; Pires, J. (2014). Impact of Multi-Rate and Multi-Format Crosstalk Signals on the Performance of 40 Gbit/s DQPSK Optical Receivers. International Conference on Photonics, Optics and Laser Technology (Photoptics 2014). 56-62</p>
29	<p>Cancela, L., Rebola, J. &amp; Pires, J. (2014). DQPSK Error Performance in the Presence of In-Band Interferers with Different Modulation Formats. European Conference on Network and Optical Communications (NOC 2014). --</p> <p>-</p>

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35	Martins, G., Cancela, L. & Rebola, J. (2012). Monte Carlo Simulation of an Optical Differential Phase-Shift Keying Communication System with Direct Detection Impaired by In-Band Crosstalk. Fourth International Conference on Advances in System Simulation .
36	Meireles, B. & Rebola, J. (2011). Optimization of optical SSB-OFDM system with direct detection for application in metropolitan/regional networks. International Conference on Optical Communication Systems - Optics 2011.
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38	Rebola, J. & Cartaxo, A. (2005). Simplified approach for the assessment of the performance of optical systems with polarisation dependent loss. Proceedings of 2005 7th International Conference Transparent Optical Networks, 2005.
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40	M. Leiria, Rebola, J. & Cartaxo, A. (2003). Gaussian approach for the performance evaluation of transparent optical networks based on optical add-drop multiplexers. Conf. on Telecommunications - ConfTele.
41	Rebola, J. & Cartaxo, A. (2003). Validation of the probability density function of the output current of optically preamplified receivers with arbitrary optical filtering through Monte Carlo simulation. European Conf. on Networks and Optical Communications - NOC.
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45	Rebola, J. & Cartaxo, A. (2001). On the quaternary level spacing signalling optimisation for increasing the transmission distance in optical communication systems. Conf. on Telecommunications - ConfTele.
46	Rebola, J. & Cartaxo, A. (2001). Performance of improved fibre grating filters in WDM systems. European Conf. on Networks and Optical Communications - NOC.
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**- Conference paper not in proceedings**

1	Alves, T., Cartaxo, A. & Rebola, J. (2021). Intercore crosstalk in direct-detection weakly-coupled multicore fiber systems. 6th International Symposium on Extremely Advanced Transmission Technologies (EXAT2021). 1-1
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**• Other Publications**

**- Other publications**

1	Cartaxo, A., Tiago M. F. Alves & Rebola, J. (2020). Review of the Discrete Changes Model of Intercore Crosstalk in Weakly-Coupled Multicore Fibers. ICTON.
2	Rebola, J., Tiago M. F. Alves & Cartaxo, A. (2019). Assessment of the combined effect of laser phase noise and intercore crosstalk on the outage probability of DD OOK systems. International Conference on Transparent Optical Networks.
3	Tiago M. F. Alves, Rebola, J. & Cartaxo, A. (2019). Characterization of Crosstalk-Impaired OOK Signals in Multicore Systems with High and Low Skew×Bit Rate. European Conference on Optical Communication.
4	Rebola, J., Tiago M. F. Alves, Cartaxo, A. & Marques, A. S. (2019). 5G fronthauls with multicore fibers: CPRI signals performance degradation induced by intercore crosstalk. SPIE Photonics West 2019.
5	Cartaxo, A., Morgado, J., Tiago M. F. Alves, Carvalho, F. C., Fonseca, D. F. & Rebola, J. (2011). A view on optical-wireless converged NG-FTTH networks. Annual Workshop on Photonic Technologies for Access and Biophotonics.

## Research Projects

Project Title	Role in Project	Partners	Period
MULTI-CORE FIBRE TEST-BED ON THE YELLOW LINE OF THE LISBON UNDERGROUND	Researcher	IT-Iscte (OCPG) - Leader, Heraus - (Germany), Metro Lisboa - (Portugal), Tratos - (Italy)	2025 - 2028
Multicore Fiber Applications and Technology	Researcher	IT-Iscte (OCPG) - Leader, UNILIM - (France), UPVLC - (Spain), IT - (Portugal), HCV - (Germany), INF - (Portugal), UST - (Germany), CNRS-PhLAM - (France), HUJI - (Israel), DTU - (Denmark), UNIVAQ - Associated Partner (Italy), FBGS - Associated Partner (Belgium), DRA - Associated Partner (France), ULille - Associated Partner (France)	2025 - 2028
Physical Impairment Modelling in Flexible Optical Node Architectures	Local Coordinator	IT-Iscte (OCPG), Infinera - (Portugal)	2016 - 2018
Analysis and Mitigation of crosstalk Effects in multicore fibre -based Networks	Researcher	IT-Iscte	2016 - 2018
Metro Networks Based on Multi-Band Orthogonal Frequency-Division Multiplexing Signals	Researcher	IT-Iscte	2013 - 2015
In-band crosstalk in optical communications systems with differential direct detection	Local Coordinator	IT-Iscte	2011 - 2013
Fully-Converged Quintuple-Play Integrated Optical-Wireless Access Architectures	Researcher	IT-Iscte, UPVLC - Leader (Spain), PTIN - (Portugal), Corning - (France), University of Essex - (United Kingdom), THALES - (France), HTW-DRESDEN - (Germany), EIT+ - (Poland), DAS - (Spain), FIBERNOVA SYSTEMS - (Spain), TOWERCOM - (Slovakia)	2010 - 2012
Transmission of Ultra wide-Band radio signals over Optical fibre	Researcher	IT-Iscte	2010 - 2012

## Academic Management Positions

Director (2025 - 2028)  
Unit/Area: Master Degree in Telecommunications and Computer Engineering

Coordenador do 1º Ano (2025 - 2028)  
Unit/Area: Master Degree in Telecommunications and Computer Engineering

Coordenador do 2º Ano (2025 - 2028)  
Unit/Area: Master Degree in Telecommunications and Computer Engineering

Vice-Presidente (2025 - 2027) Unit/Area: Comissão Pedagógica
Membro (Docente) (2025 - 2027) Unit/Area: Comissão Pedagógica
Membro (Docente) (2023 - 2025) Unit/Area: Plenário do Conselho Pedagógico
Coordenador de ECTS (2022 - 2025) Unit/Area: Department of Information Science and Technology
Membro (Docente) (2020 - 2023) Unit/Area: Plenário da Comissão Científica
Sub-diretor (2020 - 2023) Unit/Area: Institute of Telecommunications-IUL
Membro (2020 - 2023) Unit/Area: Comissão Científica
Membro (2017 - 2020) Unit/Area: Comissão Científica
Sub-diretor (2017 - 2020) Unit/Area: Institute of Telecommunications-IUL
Membro (Docente) (2017 - 2020) Unit/Area: Plenário da Comissão Científica