Scientific Output

Table of Contents

1 Scientific Expertise

Wide-field adaptive optics (design, modelling, testing), atmospheric tomography, wave-front sensing, wave propagation through random media, turbulence, signal processing, linear and non-linear optimisation, inverse (large scale) problems, dynamical control.

2 Bibliographic Databases and Listings

Bibliographic information can be found on the following on-line listings (active links):

- Researcher ID: P-1521-2016 https://tinyurl.com/gsywpqf
- Scopus: 55059470800 https://tinyurl.com/z9ys9qk
- Google Scholar: U9KtbJMAAAAJ https://tinyurl.com/hnhlt6u
- ORCID: 0000-0002-6996-0734 https://tinyurl.com/zgrus2m

Furthermore, the following societies provide complementary bibliographic information about the author:

- **ADS Personal Library** https://tinyurl.com/h5llcjg
- OSA https://tinyurl.com/jy5b83x
- SPIE http://spie.org/profile/Carlos.Correia-73295

3 Peer-reviewed Journal Papers

Journal	**Impact factor**	**#papers**
Journal of the Optical Society of America-A (JOSA-A)	1.457	9
Monthly Notices of the Royal Astronomical Society (MNRAS)	4.952	3
Astronomy and Astrophysics (A&A)	5.185	4
Applied Optics (App Opt)	1.598	2
Optics Letters (Op Lett)	3.040	2
European Journal of Control (ECC)	1.342	2
Journal of astronomical telescopes instruments-and-systems (JATIS)	3.5	2
Optics Express (Opt Exp)	3.148	1
International Journal of Robust and Nonlinear Control (IJRNC)	2.527	1
Publications of the Astronomical Society of Pacific (PASP)	3.582	1
	Total	25

Table 1 provides the impact factors for the journals I have published papers with.

Journal	**Impact factor**	**#papers**
Journal of the Optical Society of America-A (JOSA-A)	1.457	9
Monthly Notices of the Royal Astronomical Society (MNRAS)	4.952	3
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Applied Optics (App Opt)	1.598	2
Optics Letters (Op Lett)	3.040	2
European Journal of Control (ECC)	1.342	2
Journal of astronomical telescopes instruments-and-systems (JATIS)	3.5	2
Optics Express (Opt Exp)	3.148	1
International Journal of Robust and Nonlinear Control (IJRNC)	2.527	1
Publications of the Astronomical Society of Pacific (PASP)	3.582	1
	Total	25

Table 1: Journal impact factors and number of publications.

In preparation (advanced state, submission expected 2017):

- **C. M. Correia** et al, *wave-front reconstruction from pyramid signals using deconvolution-based processing in the spatial-frequency domain,* to be submitted to

MNRAS

- C. Bond, **C. M. Correia** et al, *Optical gain tracking in pyramid-based wave-front sensing for next generation adaptive-optics systems,* to be submitted to JATIS
- Masen P. Lamb, **C. M. Correia** et al *Estimating the Low Wind Effect on SPHERE with experimental and on-sky data*, to be submitted to JATIS

Published and submitted:

1. O. Martin, **C. M. Correia** et al, *Characterisation of anisoplanatism in laser-guide star adaptive optics systems,* accepter to A&A, in press

2. Y. Ono, **C. M. Correia** et al, *Large-scale atmospheric tomography using Toeplitz-structured iterative minimum-variance reconstruction*, JOSA-A, Vol. 35, Issue 8, pp. 1330-1345 (2018)
https://doi.org/10.1364/JOSAA.35.001330

3. N. Anugu, P. J. V. Garcia, C. M. Correia, *Slope bias in Shack-Hartmann wavefront sensing,* MNRAS, sty182 (2018) https://doi.org/10.1093/mnras/sty182

4. Carlos M. Correia, Charlotte Z. Bond, Jean-François Sauvage, Thierry Fusco, Rodolphe Conan, and Peter L. Wizinowich, *Temporally filtered Wiener Phase Reconstruction in Astronomical Adaptive Optics from slope data*, Vol. 34, Issue 10, pp. 1877-1887 (2017)
https://doi.org/10.1364/JOSAA.34.001877

5. Masen Lamb, **Carlos M. Correia**, Jean-François Sauvage, Jean-Pierre Véran, David Andersen, Arthur Vigan, Peter Wizinowich, Marcos van Dam, Laurent Mugnier, Charlotte Bond, *Quantifying telescope phase discontinuities external to AO-systems by use of Phase Diversity and Focal Plane Sharpening,* J. Astron. Telesc. Instrum. Syst. 3(3), 039001 (Jun 16, 2017).
https://doi.prg/10.1117/1.JATIS.3.3.039001

6. C. Bond, **Carlos M. Correia**, J.-F. Sauvage, B. Neichel and T. Fusco, *Iterative wave-front reconstruction in the spatial-frequency domain*, Opt. Express **25**(10), 11452-11465 (2017)
https://doi.org/10.1364/OE.25.011452

7. Yoshito H. Ono, **Carlos Correia**, David R. Andersen, Olivier Lardière, Shin Oya, Masayuki Akiyama, Kate Jackson, and Colin Bradley, *Statistics of turbulence parameters at Maunakea using the multiple wavefront sensor data of RAVEN*, MNRAS 465, 4931–4941 (2017)
http://dx.doi.org/ 10.1093/mnras/stw3083

8. M. Lamb, K. Venn and D. Andersen, S. Oya, M. Shetrone, A. Fattahi, L. Howes, M. Asplund, O. Lardiere, M. Akiyama, Y. Ono, H. Terada, Y. Hayano, G. Suzuki, C. Blain, K. Jackson, **C. Correia**, K. Youakim, and C. Bradley, *Using the Multi-Object Adaptive Optics demonstrator RAVEN to observe metal-poor stars in and towards the Galactic Centre*, MNRAS, (2016).
http://dx.doi.org/10.1093/mnras/stw2865

9. O. A. Martin, E. Gendron, G. Rousset, D. Gratadour, F. Vidal, T. J. Morris, A. G. Basden, R. M. Myers, **C. M. Correia** and D. Henry, *Wave-Front Error breakdown in LGS MOAO validated on-sky by CANARY*, Astronomy&Astrophysics, (2016).
http://dx.doi.org/10.1051/0004-6361/201629271

10. Yoshito H. Ono, Masayuki Akiyama, Shin Oya, Olivier Lardière, David R. Andersen, **Carlos Correia**, Kate Jackson, and Colin Bradley, *Multi time-step wavefront reconstruction for tomographic adaptive-optics systems*, Journal of the Optical Society of America A Vol. 33, Issue 4, pp. 726-740 (2016).
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11. A. Guesalaga, B. Neichel, **C. Correia**, T. Butterley J. Osborn, E. Masciadri, T. Fusco, J.-F. Sauvage, *On-line estimation of the wavefront outer- scale profile from adaptive optics telemetry*, MNRAS July (2016).
http://dx.doi.org/10.1093/mnras/stw2548

12. O. A. Martin, **C. M. Correia**, E. Gendron, G. Rousset, D. Gratadour, F. Vidal, T. J. Morris, A. G. Basden, R. M. Myers, B. Neichel, T. Fusco, *PSF reconstruction validated using on-sky CANARY data in MOAO mode,* J. Astron. Telesc. Instrum. Syst. 2(4), 048001 (2016).
https://doi.org/10.1117/1.JATIS.2.4.048001

13. **Correia, Carlos M.**, Jackson, Kate, Véran, Jean-Pierre, Andersen, David, Lardière, Olivier, Bradley, Colin, *Spatio-angular minimum-variance tomographic controller for multi-object adaptive-optics systems*, Applied Optics, vol. 54, issue 17, p. 5281 (2015).
http://dx.doi.org/10.1364/AO.54.005281

14. Jackson, Kate, **Correia, Carlos**, Lardière, Olivier, Andersen, Dave, Bradley, Colin, *Linear prediction of atmospheric wave-fronts for tomographic adaptive optics systems: modelling and robustness assessment*, Optics Letters, vol. 40, issue 2, p. 143 (2015).
http://dx.doi.org/10.1364/OL.40.000143

15. Mortier, A., Faria, J. P., **Correia, C. M.**, Santerne, A., Santos, N. C., *BGLS: A Bayesian formalism for the generalised Lomb-Scargle periodogram*, Astronomy&Astrophysics, Volume 573, id.A101, 6 pp. (2015).
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16. **Correia, Carlos M.**, Teixeira, Joel, *Anti-aliasing Wiener filtering for wave-front reconstruction in the spatial-frequency domain for high-order astronomical adaptive-optics systems*, Journal of the Optical Society of America A, vol. 31, issue 12, p. 2763 (2015).
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17. **C. Correia,** K. Jackson, J.-P. Véran, D. Andersen, O. Lardière, and C. Bradley, C., *Static and predictive tomographic reconstruction for wide-field multi-object adaptive optics systems*, Journal of the Optical Society of America A, vol. 31, issue 1, p. 101 (2014).
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18. **C. Correia**, Jean-Pierre Véran, Glen Herriot, Brent Ellerbroek, Lianqi Wang, and Luc Gilles, *Increased sky-coverage with optimal correction of tilt and tilt anisoplanatism modes in laser guide star multi-conjugate adaptive optics*, JOSA A, Vol. 30, Issue 4, pp. 604-615 (2013)
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19. **C. Correia**, Jean-Pierre Véran and Glen Herriot, *Advanced Vibration Suppression Algorithms in Adaptive Optics Systems*, J. Opt. Soc. Am. A, Vol. 29, Issue 3, pp. 185-194 (2012).
http://dx.doi.org/10.1364/JOSAA.29.000185

20. **C. Correia** and Jean-Pierre Véran, *Woofer-tweeter temporal correction split in atmospheric adaptive optics*, Optics Letters, Vol. 37, No. 15 (2012).
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21. L. Gilles, **C. Correia**, J.-P. Véran, L. Wang and B. Ellerbroek, *A simulation model based approach for long exposure atmospheric point spread function reconstruction for laser guide star multi conjugate adaptive optics*, Applied Optics, Vol. 51, Issue 31, pp. 7443-7458 (2012).
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22. D. R. Andersen, K. Jackson, C. Blain, C. Bradley, **C. Correia**, M. Ito, O. Lardière and Jean-Pierre Véran, *AO Performance Modeling for the Raven Multi-Object*

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23. **C. Correia**, Henri-François Raynaud, Caroline Kulcsár and Jean-Marc Conan, *Minimum-variance wave-front control with resonant deformable mirrors*, special issue on AO control of the European Journal of Control (EJC), Vol. 17, No. 3, 222–236 (2011).
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24. **C. Correia**, H.-F. Raynaud, C. Kulcsár, J.-M. Conan, *Minimum-variance control for the woofer-tweeter concept*, Journal of the Optical Society of America A Vol. 27, No. 11, (2010).
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25. **C. Correia**, H.-F. Raynaud, C. Kulcsár, J.-M. Conan, *On the optimal wave-front reconstruction and control in Adaptive Optics with mirror dynamics*, Journal of the Optical Society of America A, Vol 26, No. 2, 2010.
http://dx.doi.org/10.1364/JOSAA.27.000333

26. H.-F. Raynaud, **C. Correia**, C. Kulcsár, J.-M. Conan, *Minimum-variance control of astronomical adaptive optics systems with actuator dynamics under synchronous and asynchronous sampling*, International Journal of Robust and Nonlinear Control, Vol. 21, Issue 7, pag. 768–789, (2010).
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4 International Conference Proceedings

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1. Kulcsár, Caroline, Raynaud, Henri-François, Conan, Jean-Marc, Juvénal, Rémy, **Correia, Carlos,** Towards minimum-variance control of ELTs AO systems, AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017
http://doi.org/10.26698/AO4ELT5.0175

2. M. Lamb et al, *Estimation of the low wind effect on SPHERE: results from an experimental bench and on-sky data, AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017* http://doi.org/10.26698/AO4ELT5.0142

3. N. Schwartz, Sauvage, Jean-François, Correia, Carlos, Petit, Cyril, Quiros-Pacheco, Fernando, Fusco, Thierry, Dohlen, Kjetil, El Hadi, Kacem, Thatte, Niranjan, Clarke, Fraser, Paufique, Jérome, Vernet, Joel, *Sensing and control of segmented mirrors with a Pyramid wavefront sensor,* AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017 http://doi.org/10.26698/AO4ELT5.0015

4. Heritier, Cédric, Taïssir, Fusco, Thierry, Neichel, Benoit, Esposito, Simone, Oberti, Sylvain, **Correia, Carlos**, Sauvage, Jean-François, Bond, Charlotte, Fauvarque, Olivier, Pinna, Enrico, Agapito, Guido, Puglisi, Alfio, Kolb, Johann, Madec, Pierre-Yves, Bechet, Clémentine, *Overview of AO calibration strategies in the ELT context,* AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017 http://doi.org/10.26698/AO4ELT5.0035

5. Bond, Charlotte, **Correia, Carlos**, Sauvage, Jean-François, El Hadi, Kacem, Abautret, Yannick, Neichel, Benoit, Fusco, Thierry, *Optimising the performance of a Pyramid WFS: tracking the optical gain,* AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017 http://doi.org/10.26698/AO4ELT5.0039

6. Béchet, Clémentine, Ayancán, Boris, Guesalaga, Andrés, **Correia, Carlos**, Neichel, Benoit, Masciadri, Elena, Conan, Rodolphe, *PSF reconstruction via full turbulence estimation and telescope end-to-end simulation*, AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017 http://doi.org/10.26698/AO4ELT5.0051

7. **C. M. Correia** et al, *Low-order mode estimation in LTAO systems from natural guide stars,* AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017
http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

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8. O. A. Martin, **Carlos M. Correia**, Eric Gendron and Gerard Rousset, *PSF reconstruction for LGS MOAO systems,* JRIOA, Bordeaux (2016)
http://www.sfoptique.org/pages/congres-optique/bordeaux-2016/

9. **Carlos Correia** and Paolo Massioni, *Strehl-optimal Kalman filtering in large-scale*

tomographic adaptive optics, OSA Imaging and Applied Optics, Heidelberg, Germany, July 2016
https://doi.org/10.1364/AOMS.2016.AOW5C.2

10. **Carlos M. Correia**, Benoit Neichel, Jean-Marc Conan, Cyril Petit, Jean-Francois Sauvage, Thierry Fusco, Joel D. R. Vernet, Niranjan Thatte, *Natural guide-star processing for wide-field laser-assisted AO systems*, *Proc. SPIE* 9909, Adaptive Optics Systems V, 990909 (July 26, 2016)
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12. O. A. Martin, **C. M. Correia**, E. Gendron, G. Rousset, F. Vidal, T. J. Morris, A. G. Basden, R. M. Myers, Y. H. Ono, B. Neichel, T. Fusco, *William Herschel Telescope site characterization using the MOAO pathfinder CANARY on-sky data,* Proc. SPIE 9909, Adaptive Optics Systems V, 990909 (July 26, 2016)
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13. Masen Lamb, **Carlos Correia**, Jean-Francois Sauvage, Jean-Pierre Véran, David Andersen, Arthur Vigan, Peter Wizinowich, Marcos van Dam, Laurent Mugnier, Charlotte Bond, *Estimating phase errors from pupil discontinuities from simulated on sky data: examples with VLT and Keck*, *Proc. SPIE* 9909, Adaptive Optics Systems V, 990909 (July 26, 2016)
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18. Niranjan A. Thatte, Fraser Clarke, Ian Bryson, Hermine Shnetler, Matthias Tecza, Thierry Fusco, Roland M. Bacon, Johan Richard, Evencio Mediavilla, Benoıt Neichel, Santiago Arribas, Begona Garcia-Lorenzo, Christopher J. Evans, Alban Remillieux, Kacem El Madi, Jose Miguel Herreros, Dave Melotte, Kieran O'Brien, Ian A. Tosh, Joel Vernet, Peter Hammersley, Derek J. Ives, Gert Finger, Ryan Houghton, Dimitra Rigopoulou, James D. Lynn, Jamie R. Allen, Simon D. Zieleniewski, Sarah Kendrew, Vanessa Ferraro-Wood, Arlette P´econtal-Rousset, Johan Kosmalski, Florence Laurent, Magali Loupias, Laure Piqueras, Edgar Renault, Jeremy Blaizot, Eric Daguise, Jean- Emmanuel Migniau, Aurélien Jarno, Andy Born, Angus M. Gallie, David M. Montgomery, David Henry, Noah Schwartz, William Taylor, Gerard Zins, Luis Fernando Rodrıguez-Ramos, Miguel Cagigas, Giuseppina Battaglia, Refael Rebolo Lopez, Elvio Hernandez Suarez, Jose Vicente Gigante-Ripoll, Javier Piqueras Lopez, Montserrat Villa Martin, **Carlos Correia**, Sandrine Pascal, Leonardo Blanco, Pascal Vola, Benoit Epinat, Celine Peroux, Arthur Vigan, Kjetil Dohlen, Jean-Francois Sauvage, Martin Lee, Alexis Carlotti, Christophe Verinaud, Tim Morris, Richard Myers, Andrew Reeves, Mark Swinbank, Ariadna Calcines, Marrie Larrieu, *The E-ELT first light spectrograph HARMONI: capabilities and modes*, *Proc. SPIE* 9909, Adaptive Optics Systems V, 990909 (July 26, 2016)
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19. A. Guesalaga, B. Neichel, **C. Correia**, T. Butterley, J. Osborn, E. Masciadri, T. Fusco, J.-F. Sauvage, *Online estimation of atmospheric turbulence parameters and outer-scale profiling*, Proc. of the SPIE, Edinburgh (2016)
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20. Charlotte Z. Bond, Kacem El Hadi, Jean-Francois Sauvage, **Carlos Correia**, Olivier

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23. Wilfried Jahn, Emmanuel Hugot, Thierry Fusco, Benoit Neichel, Marc Ferrari, **Carlos Correia**, Laurent Pueyo, Kjetil Dohlen, Sandrine Pascal, Pascal Vola, Jean-Francois Sauvage, Kacem El Hadi, Jean Luc Gach, *Laser guide star spot shrinkage for affordable wavefront sensors*, Proc. of the SPIE, Edinburgh (2016)
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24. Charlotte Bond, Thierry Fusco, **Carlos Correia**, Jean-Pierre Veran, Joel Teixeira, *Anti-aliasing wave-front reconstruction with Shack-Hartmann sensors,* Proc. of the AO4ELT4, Lake Arrowhead, CA, USA (2015)
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http://dx.doi.org/10.1117/12.2054470

28. L. Gilles, H. F. Raynaud, **C. Correia**, L. Wang, B. Ellerbroek, C. Boyer, C. Kulcsár , *Kalman filter design for atmospheric tip/tilt, tip/tilt anisoplanatism and focus filtering on extremely large telescopes*, Proc. SPIE Volume 9148, id. 91486C 9 pp. (2014)
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29. Kate Jackson, **Carlos Correia**, Olivier Lardière, Dave Andersen, Colin Bradley, Laurie Pham, Celia Blain, Reston Nash, Darryl Gamroth, Jean-Pierre Véran, *Tomography and calibration for Raven: from simulations to laboratory results*, Proc. SPIE Volume 9148, id. 91482K 13 pp. (2014)
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30. Lianqi Wang, Luc Gilles, Brent Ellerbroek, **Carlos Correia**, *Physical optics modeling of sky coverage for TMT NFIRAOS with advanced LQG controller*, Proc. SPIE Volume 9148, id. 91482J 10 pp. (2014)
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front reconstruction for the non-linear curvature wave-front sensor, Proceedings of the Third AO4ELT Conference. Firenze, Italy, May 26-31, 2013, http://dx.doi.org/10.12839/AO4ELT3.13290

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

79. Y. Ono et al, *Turbulence profiling simulation for tomographic AO systems in ELTs,* AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017

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85. Gray, Morgan, Petit, Cyril, **Correia, Carlos**, Neichel, Benoit, Rodionov, Sergey, Bocquet, Marc, Bertino, Laurent, Ferrari, Marc, Fusco, Thierry, *Local Ensemble Transform Kalman Filter: a fast non-stationary control law for SCAO and XAO systems on ELTs*, Proc. of the AO4ELT4, Lake Arrowhead, CA, USA (2015)

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88. Thierry Fusco, Laurent Pueyo, **Carlos Correia**, Emmanuel Hugot, Wilfried Jahn, Benoit Neichel and Marc Ferrari, New concepts of modified Shack-Hartman for an elongation-free wavefront sensing of Na-Laser guide stars, Proc. of the AO4ELT4, Lake Arrowhead, CA, USA (2015)
https://escholarship.org/uc/item/5cf394wh

89. L. Gilles, **C. Correia**, J.P. Veran, L. Wang and B. Ellerbroek, *PSF Reconstruction for LGS MCAO*, Gemini North Adaptive Optics Workshop Victoria, Canada, June 19-21 2012
https://www.astrosci.ca/gnao2012/Home.html

90. David Andersen, Colin Bradley, Andrew Brownsword, Yvonne Coady, **Carlos Correia**, et al *OpenCL as an ideal programming platform for compute intensive RTCs such as Raven*, Adaptive Optics Real-time control system workshop, Durham, UK, 13-14th April 2011
www.dur.ac.uk/cfai/adaptiveoptics/rtc2011/

5 Oral communications

Invited

1. *Advanced control laws for the new generation of AO systems*
SPIE Conference on Adaptive Optics Systems, Austin June 2018
https://spie.org/AS/conferencedetails/adaptive-optics-in-astronomy

2. *Highly sensitive NGS-WFS for low order measurements*
Wavefront Sensing in the VLT/ELT era, Marseille, September 2016
https://www.lam.fr/recherche-14/groupe-r-d-optique-instrumentation/workshops/article/wavefront-sensing-in-the-vlt-elt-era?lang=fr

3. *Adaptive optics in the Extremely Large Telescope era: new requirements, new concepts and new challenges*

CLEO conference, San Jose, CA USA, Jun 2016
http://cleoconference.org/

International Conferences and Meetings

4. *On-sky results of the AOF online profiler* (on behalf of Andrés Guesalaga)
   Workshop week 2018!, Durham March 2018
   https://www.dur.ac.uk/cfai/adaptiveoptics/workshopweek2018/agenda/

5. *Tomographic Wave-front Estimation with Recursive Toeplitz Reconstructor matrix structure for Large Scale Systems*
   Workshop week 2018!, Durham March 2018
   https://www.dur.ac.uk/cfai/adaptiveoptics/workshopweek2018/agenda/

6. *Analytic performance assessment using pyramids*
   Workshop week 2018!, Durham March 2018
   https://www.dur.ac.uk/cfai/adaptiveoptics/workshopweek2018/agenda/

7. *PSF reconstruction for MUSE wide Field Mode. From theory to on-sky results* (on behalf of Thierry Fusco)
   Workshop week 2018!, Durham March 2018
   https://www.dur.ac.uk/cfai/adaptiveoptics/workshopweek2018/agenda/

8. *Estimation of the low wind effect on SPHERE: results from an experimental bench and on-sky data (on behalf of M. Lamb)*
   AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017
   http://doi.org/10.26698/AO4ELT5.0142

9. *A deconvolution-based formalism for Modulated pyramid WFS (on behalf of O Fauvarque)*
   AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017
   http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

10. *Analytic modelling of Shack-Hartmann and Pyramid WFSs under predictive closed-loop control*
    WaveFront Sensing in the VLT/ELT era II
    http://web.oapd.inaf.it/adoni/wfs2017/

11. *Estimation of the low wind effect on SPHERE: results from an experimental bench and on-sky data, AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-*

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http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

12. *A deconvolution-based formalism for Modulated pyramid WFS,* AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017
http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

13. Turbulence Tomography for Astronomical Adaptive Optics, 100 years of the Radon transform, Linz, Austria, March 2017
http://www.ricam.oeaw.ac.at/events/conferences/radon100/

14. *Strehl-optimal Kalman filtering in large-scale tomographic adaptive optics*
OSA Imaging and Applied Optics, Heidelberg, Germany, July 2016
http://www.osa.org/en-us/meetings/optics_and_photonics_congresses/imaging_and_applied_optics

15. *Spatio-angular Linear Quadratic Gaussian algorithm for prediction and control in Tomographic Systems*
AO4ELT4 conference, Lake Arrowhead, CA, USA (2015)
http://cfao.ucolick.org/ao4elt4/

16. *Static tomographic reconstruction for wide-field multi-object AO systems*
AO Tomography Workshop, Leiden, NL, July 2012
https://www.dur.ac.uk/cfai/adaptiveoptics/aotw12/

17. *Point Spread Function Reconstruction from Telemetry Data for LGS-assisted Multi-Conjugate Adaptive Optics*
PSF reconstruction workshop, Marseille Jan 2014
https://www.lam.fr/recherche-14/groupe-r-d-optique-instrumentation/workshops/past-workshops/article/fp7-opticon-psf-reconstruction?lang=fr

18. *Raven MOAO science and technology demonstrator for Subaru 8m telescope*
AO tomography workshop, Durham, March 2014
https://www.dur.ac.uk/cfai/adaptiveoptics/aotw14/

19. *Advanced control of low order modes in laser guide star multi-conjugate adaptive optics systems*
SPIE 8447, Adaptive Optics Systems III, 84471S (September 2012)
http://dx.doi.org/10.1117/12.926872

20. *Tip/tilt point spread function reconstruction for laser guide star multi- conjugate adaptive optics*,
SPIE 8447, Adaptive Optics Systems III, 844729 (September 2012)
http://dx.doi.org/10.1117/12.926928

21. *Vibration Suppression Algorithms for NFIRAOS on TMT*
AO4ELT2 conference (2011)
http://ao4elt2.lesia.obspm.fr/spip.php?article704

22. *Laser-Guide Star Point-Spread Function Reconstruction for ELTs*
AO4ELT2 conference (2011).
http://ao4elt2.lesia.obspm.fr/spip.php?article705

23. *Advanced NGS-mode control in NFIRAOS using split-tomography*
OSA Topical Meetings, Toronto, Canada, (Jul 2011).
www.opticsinfobase.org/abstract.cfm?URI=AO-2011-AMB4

24. *Gemini Planet Imager minimum-variance tip-tilt controllers*
OSA Topical Meetings, Toronto, Canada, (Jul 2011).
https://doi.org/10.1364/AOPT.2011.AMB2

25. *NFIRAOS-TMT Early Light Adaptive Optics Syste*m
OSA Topical Meetings, Toronto, Canada, (Jul 2011).
https://doi.org/10.1364/AOPT.2011.AWA4

26. *NFIRAOS Natural Guide Star Processing*
CfAO Fall Retreat, Lake Arrowhead, University of California, USA, (2010).
http://cfao.ucolick.org/meetings/fallretreat2010/index.php

27. *Accounting for mirror dynamics in optimal adaptive optics control*
ECC09, Budapest, (Aug. 2009).
https://controls.papercept.net/conferences/scripts/abstract.pl?ConfID=5&Number=519

28. *Minimum-variance control for the woofer-tweeter concept*
OSA Topical Meetings, San Diego, USA, (Oct 2009).
https://doi.org/10.1364/AOPT.2009.AOWB4

29. *Adapting optimal LQG methods to ELT-sized AO systems*
AO4ELT conference, Paris, (June 2009).
http://dx.doi.org/10.1051/ao4elt/201007003

30. *Globally optimal minimum-variance control in adaptive optics systems with mirror dynamics*
SPIE - Ground-based Astronomical Instrumentation, Marseille, (July 2008).
http://dx.doi.org/10.1117/12.788459

31. *Multi-rate control for high-order adaptive optics systems*,
SPIE, Orlando, FL. USA, (2006).
http://dx.doi.org/10.1117/12.672236

National Meetings

32. *Fourier-domain wave-front reconstruction for large adaptive optical systems*,
Semaine Francaise d'Astronomie et d'Astrophysique, Grenoble, (July 2007).
http://www-laog.obs.ujf-grenoble.fr/public/chalabae/proceedings_sf2a_pdf/sf2a_toc.html

33. *Multi-rate control for high-order adaptive optics systems*,
SPIE, Orlando, FL. USA, (2006).
http://dx.doi.org/10.1117/12.672236

Invited seminars

1. *Adaptive optics in the Extremely Large Telescope era: new requirements, new concepts and new challenges*,
Univ Catolica Chile, (Nov 2016)

2. *Gemstone Adaptive Optics: jewellery to be deployed on next generation systems*,
Gemini South Observatory, Chile, (Nov 16).

3. *Harmoni @ E-ELT: project status*
Giant Magellan Telescope Project Office, Pasadena, CA USA, (Jun 2016).

4. *Extremely (Adaptive) Large Telescopes*
Faculty of Engineering, Univ. Porto, (May 2016)

5. *Extremely Large Telescopes era: (high-resolution) instrumentation, challenges, opportunities*
Centre for Astrophysics of Univ. of Porto (CAUP), Porto, (Mar 2012).

6. *Optimal control in Adaptive Optics*

Herzberg Institute of Astrophysics, Victoria BC, Canada, (Oct 2009).

7. *Optimal Reconstruction and Control Strategies for Extremely Large Telescopes* Arcetri Observatory, Florence, (May 2009).

8. *Adaptive Optics for Future Telescopes – wave-front reconstruction and control* Univ. of Padova, Padova, (July 2007).

9. *Adaptive Optics for future giant telescopes - strategies for wave-front reconstruction,* Centre for Astrophysics of Univ. of Porto (CAUP), Porto, (Oct 2005).

10. *Adaptive Optics Simulators*,
1st Iberian Meeting of Researchers in Optics, Univ. of Porto, Porto, (Oct 2004).
https://sigarra.up.pt/feup/pt/NOTICIAS_GERAL.ver_noticia?p_nr=3385

Other oral communications, research seminars

11. *Adaptive optics in the Extremely Large Telescope era: new requirements, new concepts and new challenges*
INSA Lyon, France, (Nov 2016)

12. *High-angular Resolution Astronomical Instrumentation*
Univ Catolica Chile, (Nov 2016)

13. *Developments and science with High-Contrast Imaging instruments*
CAUP seminars, (Sept 2014)

14. *Iterative Strehl-optimal regulators*
Workshop Local ETKF for Adaptive Optics on ELTs, Marseille, (Nov 2014).

15. *Anti-aliasing Wiener filtering for wave-front reconstruction in the spatial-frequency domain for high-order astronomical adaptive-optics systems*
Herzberg Institute of Astrophysics, Victoria BC Canada, (Nov 2014)

16. *Modelling adaptive-optics for wide-field and high-contrast imaging systems on ELT-sized telescopes*
LAM, Marseille, (Dec 2013)

17. *Raven MOAO science and technology demonstrator for Subaru 8m telescope*
Paris Observatory, (Nov 2013)

18. *Adaptive Optics @HIA ???*

Herzberg Institute of Astrophysics Seminars, (Jan 2013)

19. *Conception de lois de commande a hautes performances pour l'optique adaptative des grands/très grands telescopes*
Journées des Doctorants en Physique, ONERA (Jan. 2009).

20. *Conception de lois de commande a hautes performances pour l'optique adaptative des grands/très grands telescopes*
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Poster Communications

1. *Low-order mode estimation in LTAO systems from natural guide stars*
AO4ELT - 5 conference, Tenerife, Canary Islands, Spain, June 25-30, 2017
http://www.iac.es/congreso/AO4ELT5/pages/scientific-programme.php

2. *Natural guide-star processing for wide-field laser-assisted AO systems*
SPIE Conference, Edinburgh (2016)
https://doi.org/10.1117/12.2232918

3. *Wave-front reconstruction for the non-linear curvature wave-front sensor*,
Third AO4ELT Conference. Firenze, Italy, May 26-31, (2013).
http://dx.doi.org/10.12839/AO4ELT3.13290

4. *Conception de lois de commande a hautes performances pour l'optique adaptative des grands/très grands télescopes*,
Journées des Doctorants de l'Ecole Doctorale Galilée, Univ. Paris XIII March (2009),
Jury award winning.

5. *Hartmann modelling in the Fourier domain; Application to real-time reconstruction in Adaptive Optics*
SPIE 2008, Marseille, (July 2008).
http://dx.doi.org/10.1117/12.788455

6. *LQ control design for adaptive optics systems based on MIMO identified model* (Presenter)
SPIE, Orlando, Florida, USA, (June 2006)
http://dx.doi.org/10.1117/12.671946

7. *Estimation strategies for SCAO and GLAO*
OSA Topical Meetings, Optical Society of America, Charlotte, (June 2005).
http://ccorreia.net/docs/ccorreia05_osaTopical.pdf

6 Software

1. *OOMAO: Object Oriented Matlab Adaptive Optics*
   Generic Object-oriented Monte Carlo physical optics simulator with added capability to model AO in the spatial frequency domain and as real-time controller for lab experiments.
   Currently used by 10+ leading institutes with ~5 co-developers and ~30 users.
   https://github.com/cmcorreia/LAM-Public

2. *NFIRAOS on-instrument wave-front sensor controller*
   Currently installed on MAOS, the Multi-Threaded Adaptive Optics Simulator available from https://lianqiw.github.io/maos/index.html. MAOS is maintened by Lianqi Wang from TMT, with the simulator being used by leading European and North American Optics Labs. The controller SW is available on demand

3. *GPI Woofer-Tweeter tip-tilt controllers*
   Controller developed in Matlab to estimate the tip-tilt modes of GPI with embedded vibration rejection and common/non-common path mode estimation. It is available on demand.

7 Reports

Contributed

1. *European ELT Design Studies Final Report*, 2009. [private access]

2. *The Overwhelmingly Large Telescope Blue Book*, 2006.
   www.eso.org/sci/facilities/eelt/owl/Phase_A_Review.html

3. *Re-baselining the ESO ELT project - Adaptive Optics*, ESO, 2006. [private access]

4. *SPARTA for OWL: Standard Platform for Adaptive Optics and Real Time Applications: Estimation and control strategies*, ESO, 2006. [private access]

5. *SPARTA Adaptive Optics Real Time Computer Platform - Straw-man Design for OWL*, ESO, 2006, [private access]

Other Technical Reports

6. C. Correia et al, *Conjugate gradient for NFIRAOS tomographic reconstruction,* Herzberg Institute of Astrophysics, Canada, 2013. [private access]

7. C. Correia et al, *Vibration suppression for NFIRAOS using the multi-rate LQG controller,* Herzberg Institute of Astrophysics, Canada, 2013. [private access]

8. C. Correia et al., *Gemini Planet Imager Tip-Tilt controller*, Herzberg Institute of Astrophysics, Canada, 2011. [private access]

9. C. Correia et al, *Fourier-domain reconstructor for SCAO - Open and closed-loop simulations,* European Large Telescope Design Studies – WP9600, Issue 1, Doc No. ELT-ESO-TRE-09600-0001, 2006 [private access]

10. C. Correia et al, Fast Algorithms for Wave-front reconstruction in Adaptive Optics – Development report – ESO, November 2006. [private access]

11. C. Correia et al, Fourier-Domain Preconditioned Conjugate Gradient – Development report – ESO, November 2006. [private access]