Stefano Bonora,
Researcher,
National Council of Research
Institute for Photonics and Nanotechnology
Via Trasea 7, 35131, Padova, Italy

CURRICULUM VITAE

Born in Mantova 24/02/1974, Via Venier 118, Padova (PD)

Work experiences:

2013 Hilase project (www.http://hilase.cz/)

2004 – Today: Researcher for CNR-Institute for Photonics and Nanotechnology IFN at the LUXOR Labs

June 2012 Visiting scientist at the Visual Science Retinal Imaging Lab, Uc Davis, Sacramento (Resp. Dr R.Zawadzki).

July 2011 Visiting scientist at the National University of Ireland, Galway (Resp. Prof. C.Dainty).

July 2008 Visiting scientist at Insitute non Lineaire of Nice (INLN (Resp. Dr S.Residori).

Oct2006-Oct 2007 Visiting Scientist at the Central Laser Facility - Rutherford Appleton Laboratory and Clarendon Laboratory Oxford University (Resp. Dr J.Collier and Prof. A.Cavalleri)

Other Experiences: Steering committee of the project Skiascopy between Adaptica srl and the NGO CMB Italy for the realization of a skiascope for the third world (2010).

Education:

2005-2007 PhD in Electronic and Telecommunication Engineering at the University of Padova in December 2007

2003 Master Degree in Applied Optics at the Department of the Information Engineering, University of Padova

2000 Laurea degree in Electronic Engineering, University of Padova

1994 Technical Education in Electronics (ITIS E.Fermi, Mantova - 60/60) – Unindustria Best students award.

Main research interests:

Since 2004 Dr Bonora has developed a research line in the design, realization and application of deformable mirrors. He designed and realized adaptive systems for ultrafast lasers for the facilities in: University of Konstanz (2011), Fritz Haber Institute Berlin (2010) and Max Planck Research Department for Structural Dynamics at the University of Hamburg (2009), Petawatt laser source Vulcan, Rutherford laboratory Oxford (2007). He design and develops new types of deformable mirrors and applications to lasers, parametric amplifiers and microscopy.

Highlights:

He invented 3 new types of deformable mirrors which have been highlighted by interviews and on technology reports (Nat. Phot. Tech Focus 2011, photonics.com 2010, PHYSorg.com 2010)

He one of the former member of the spin-off of the University of Padova *Adaptica srl* (2009).

He designed the deformable mirrors *PAN, SATURN*, and the Adaptive Optics didactical kit *DIDAPTICA* which are worldwide distributed by Edmund Optics.

He is author of 26 peer review publications on scientific journals (9 as first author, one on Nature Physics, two as unique author), one book chapter and of 8 patent applications (3 of them granted to companies and internationally extended).

Winner of the first prize of the national business plan contest: *Start Cup2004.*

References of Stefano Bonora

Patents

2011

[1] S. Bonora, M.Meneghini, A.Marrani, M.Bassi, I. Falco, E.Zanoni, SOL 2011/03 - 2010/0131 - *LED Lighting devices comprising deformable reflective element possibly comprising VDF-TrFE piezoelectric portion*, European patent pending, March 2011, **CNR, University of Padova and Solvay Solexis**

2009

[2] S.Bonora, I.Capraro, F.Frassetto, C.Trestino, T.Occhipinti, *Actuating device for adaptive optics instruments* M3101733/IT, extended to European EP2339391 (A1) Dec 2009, **Adaptica Srl**

[3] S.Bonora, *Metodo di realizzazione di uno specchio a membrana deformabile del tipo "push-pull"* PD2009A000262, 11.09.2009, **Adaptica srl**

[4] S.Bonora, U.Bortolozzo, S.Residori, *Optically controlled deformable reflective/refractive assembly with photoconductive substrate*, PCT/IB2009/054829, 30/10/2009, **CNR, CNRS**

2006

[5] S.Roman, S.Bonora, P.Villoresi, G.Marulli, M.Schiavon, F.Rea, F.Calabrese, *Laser technique for lung aerostasys*, PCT Patent Pending 2006, **University of Padova and CNR**

[6] S.Bonora, P.Villoresi *A surgical apparatus for treating biological hard tissues based on fiber laser*, PCT Patent Pending 2006, PCT/IB2006/054738, **University of Padova and CNR**

2005

[7] S.Bonora, P.Villoresi *Beam Shaping device for high power diode lasers with constant optical paths* 2005, **CNR and University of Padova**

2003

[8] P.Villoresi, S.Bonora PCT Patent extended to Europe, United States, Brazil, China, Canada, Russia: Laser apparatus for treating hard tissue and method for using the apparatus 2003, **Granted to Cefla scarl**

Popular articles, interviews, highlights

[9] Optically adapting, **Editor's Choice, Science,** Vol 335, Issue 6075, pp. 1410, March 2012, by I.S. Osborne.

[10] *Few-optical-cycle pulses tunable from the visible to the mid-infrared by optical parametric amplifiers*, D.Brida, at al has been selected in the **2010 Highlights of Journal of Optics,** http://iopscience.iop.org/2040-8986/page/Highlights%20of%202010

[11] **Nature Photonics Tech Focus** on Adaptive Optics Highlights: Ultrabroadband shaping, pag 17, January 2011

[12] *Infrared add-on could let standard cameras see cancer*, **New Scientist**, December 2010 by Kate McAlpine

[13] *Controlling a deformable mirror with light*, from **photonics.com**: 10/04/2010 http://www.photonics.com/Article.aspx?AID=44515

[14] *Light, instead of electrodes, could control deformable mirrors*, **PHYSorg.com**. 15 Jul 2010. www.physorg.com/news198389548.html

[15] S.Bonora, P.Villoresi, *Advanced optics expands diode laser capabilities*, **SPIE Newsroom** 10.1117, 5 July 2006

[16] StartCup: *L' incontenibile Fazio premia la ricerca*, Corriere del Veneto 2004

[17] University.it: *All' università nasce il trapano dentistico del futuro*, 3/05/2004

[18] Gazzettino di Padova: *Il trapano laser ha trovato un compratore*, 4/5/2004

[19] Connesso.it: *All' Università di Padova nasce il trapano dentistico del futuro*, 3/5/2004

Invited talks:

28th of January 2013: Guest speaker at the Optical Microsystems: Optimi status seminar, http://www.optimi.uni-jena.de/Workshops/2013+_+Status+Seminar.html

19 June 2012, Invited oral presentation S. Bonora: *Adaptive Optics development @ IFN – Institute of Photonics and Nanotechnology,* Visual Science Retinal Imaging Lab, UC Davis, R.Zawadzki

8 February 2012, Invited oral presentation S. Bonora: *Adaptive Optics development @ IFN – Institute of Photonics and Nanotechnology,* Institute of Physics of Prague, Cech Republic, A.Lucianetti
22 February 2012, Invited oral presentation S. Bonora: *Adaptive Optics development @ IFN – Institute of Photonics and Nanotechnology, Frauhnhoffer institute for Applied Optics (E.Beckert)*
2007, Invited oral presentation S. Bonora, *Push pull deformable mirro and its application in visual optics* National Univertisy of Galway Ireland, Department of Applied Optics February

Book Chapter:

[1] S. Bonora, U. Bortolozzo, G. Naletto and S.Residori, **Innovative Membrane Deformable Mirrors**, Topics in Adaptive Optics, ISBN 978-953-307-949-3, Edited by: Robert K. Tyson 2012

[2] **Devices and Techniques for Sensorless Adaptive Optics**
by S. Bonora, R.J. Zawadzki, G. Naletto, U. Bortolozzo and S. Residoriin the book "Adaptive Optics Progress" edited by Robert K. Tyson, ISBN 978-953-51-0894-8, InTech, December 12, 2012

Pubblications

2013

[3] M. Minozzi, S. Bonora, A. V. Sergienko, G. Vallone, and P. Villoresi, *Optimization of two-photon wave function in parametric down conversion by adaptive optics control of the pump radiation*, Optics Letters, Vol. 38, Issue 4, pp. 489-491 (2013), http://dx.doi.org/10.1364/OL.38.000489

[4] F.Frassetto, S.Bonora, C.Vozzi, S.Stagira, E.Zanchetta, G.Della Giustina, G.Brusatin, and L.Poletto, *Active-grating monochromator for the spectral selection of ultrashort pulses*, to be published

2012

[5] S. Bonora, F. Frassetto, E. Zanchetta, G. Della Giustina, G. Brusatin, and L. Poletto, *Active diffraction gratings: Development and tests*, Rev. Sci. Instrum. **83**, 123106 (2012);

[6] Alain Hache, Phuong Ahn Do, and Stefano Bonora, *Surface heating by optical beams and application to mid-IR imaging*, Applied Optics 51 (27) , pp. 6578-6585

[7] S.Bonora, D.Coburn, U.Bortolozzo, C.Dainty, S.Residori, *High resolution wavefront correction with photocontrolled deformable mirror*, Optics Express Vol. 20, Issue 5, pp. 5178-5188 (2012)

[1] S. Bonora, F. Frassetto, S. Coraggia, C. Spezzani, M. Coreno, M. Negro, M. Devetta, C. Vozzi, S. Stagira, L.Poletto, *Optimization of low-order harmonic generation by exploitation of a deformable mirror*, Applied Physics B, Vol. 106, Num. 4 (2012)

2011

[8] D. Wegkamp, D. Brida, S. Bonora, G. Cerullo, J. Stähler, M. Wolf and S. Wall, *Phase retrieval and compression of low-power white-light pulses*, Applied Physics Letters 99, 101101 (2011)

[9] S. Bonora, M.Meneghini, A.Marrani, M.Bassi, I. Falco, E.Zanoni, *Photostrictive effect in a polyvinylidene fluoride-trifluoroethylene copolymer*, Applied Physics Letters 99, 033506 (2011)

[10] S.Bonora, *Distributed actuators deformable mirror for adaptive optics* , Optics Communications, 284(13), 3467-3473 (2011)

[11] S.Wall, D.Brida, H.P.Ehrke, A.Ardavan, S.Bonora, H.Matsusaki, H.Uemura, Y.Takahashi, T. Hasegawa, H.Okamoto, G. Cerullo, A. Cavalleri, *Quantum interference between charge excitation paths in a solid-state Mott insulator*, Nature Physics, 114-118, Vol. 7, 2011

2010

[12] S.Bonora, D.Brida, P.Villoresi, G.Cerullo, *Ultrabroadband pulse shaping with a push-pull deformable mirror* Optics Express 18(22), 2010

[13] U. Bortolozzo, S. Bonora, J. P. Huignard, and S. Residori, Continuous photocontrolled deformable membrane mirror Appl. Phys. Lett. **96**, 251108 (2010); doi:10.1063/1.3457443

[14] C.Bonato, S.Bonora, A.Chiuri, P.Mataloni, G.Milani, G.Vallone, and P.Villoresi, *Phase control of a path-entangled photon state by a deformable membrane mirror*, JOSA B, Vol. 27, Issue 6, pp. A175-A180 (2010) doi:10.1364/JOSAB.27.00A175

[15] S.Bonora, U.Bortolozzo, S.Residori, R.Balu, P.V.Ashrit, *Mid-IR to near-IR image conversion by thermally*

induced optical switching in vanadium dioxide Optics Letters, Vol. 35, Issue 2, pp. 103-105 (2010)

[16] REVIEW: D.Brida, C.Manzoni, G.Cirmi, M.Marangoni, S.Bonora, P.Villoresi, S.De Silvestri and G.Cerullo, *Few-optical-cycle pulses tunable from the visible to the mid-infrared by optical parametric amplifiers* J. Opt. 12 (2010) 013001 (13pp)

2009

[17] D.Brida, S.Bonora, C.Manzoni, M.Marangoni, P.Villoresi, S.De Silvestri and G.Cerullo, *Generation of 8.5-fs pulses at 1.3 μm for ultrabroadband pump-probe spectroscopy* 2009 / Vol. 17, No. 15 / Opt Express

2008

[18] C.Bonato, A.Sergienko, S.Bonora, P.Villoresi *Even-order aberration cancellation in quantum interferometry*, Phys. Rev. Lett. 101, 233603 (2008)

[19] D. Brida, G. Cirmi, C. Manzoni, S, Bonora, P. Villoresi, S. De Silvestri and G. Cerullo *Sub-two-cycle light pulses at 1.6μm from an optical parametric amplifier*, Optics Letters, Vol. 33, Issue 7, pp. 741 2008

2007

[20] G. Naletto, F. Frassetto, N. Codogno, E. Grisan, S. Bonora, V. Da Deppo, and A. Ruggeri, *No wavefront sensor adaptive optics system for compensation of primary aberrations by software analysis of a point source image* Appl Opt. 2007 Sep 1;46 (25):6427-33 17805383

[21] S. Bonora and P. Villoresi, *Diode laser beam shaping by optical paths equalisation*, Journal of Pure and 2007 J. Opt. A: Pure Appl. Opt. 9 441-445

[22] S. Bonora, *All-reflective compact beam-shaping system for high-power semiconductor lasers* J. Opt. A: Pure Appl. Opt. 9 380-386,

2006

[23] S. Bonora, L.Poletto, *Push-pull membrane mirrors for adaptive optics*, Optics Express 2006, Vol. 14 No. 25

[24] S. Bonora, I. Capraro, L. Poletto, M. Romanin, C. Trestino, P. Villoresi *Fast wavefront active control by a simple DSP-Driven deformable mirror* Review of Scientific Instruments 2006, September, 77

[25] M. Pascolini, S. Bonora, A.Giglia, N. Mahne, S.Nannarone, L. Poletto, *Gratings in the conical diffraction mounting for an EUV time-compensated monochromator* Applied Optics 2006, May 15, Vol. 45, No. 14

2004

[26] P.Villoresi, S.Bonora, M.Pascolini, L.Poletto, and G.Tondello; C.Vozzi M.Nisoli, G.Sansone, S.Stagira, and S.De Silvestri *Optimization of high-order-harmonic generation by adaptive control of sub-10 fs pulse wavefront*, Optics Letter 2004, Jan 15, Vol. 29, No.2

[27] L.Poletto, S.Bonora, M.Pascolini, and P.Villoresi *Instrumentation for analysis and utilization of extreme-ultraviolet and soft X-ray high-order harmonics* Review of scientific instruments 2004, Vol. 75, pag. 4413

[28] P.Villoresi, S.Bonora, M.Pascolini, L.Poletto, C.Vozzi, G.Sansone, S.Stagira, M.Nisoli Wavefront Control in *High Harmonics Generation with few- and many-optical-cycle laser pulses* 14th International Conference on Ultrafast Phenomena (Niigata, Japan, July 25-30, 2004) Ultrafast Phenomena XIV, Springer Verlag 2004