

# Curriculum vitæ

October 9, 2017

## Jacopo Parravicini

Date of Birth: September 22, 1981  
Place of Birth: Milano (Italy)  
Citizenship: Italy

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## Position

*Dipartimento di Scienza dei Materiali (Material Science Department)*, Università di Milano-Bicocca (Milano, Italy) - “Assegnista” (“Research Fellow”) - February 2016 - Now.

Qualified as Associate Professor of experimental matter physics (Italian “Abilitazione Scientifica Nazionale”, II fascia, classe 02/B1) - April 2017 - Now.

## Education

### Academical

Ph.D. **Electronic Engineering, curriculum Photonics**, Università di Pavia (Pavia, Italy), January 2010.

*Title of the thesis:* “Photorefractive phenomena in lithium niobate”.

*Tutor:* Prof. V. Degiorgio (Università di Pavia)

M.D. “Laurea” (Master Degree) in **Physics** *summa cum laude*, Università di Milano (Milano, Italy), June 2006.

*Title of the (experimental) thesis:* “Fotorifrattività e proprietà ottiche nonlineari di cristalli di niobato di litio drogati afnio” (“Photorefractive and nonlinear optical properties of hafnium-doped lithium-niobate crystals”).

*Supervisors:* Prof. F. Casagrande (Università di Milano), Prof. V. Degiorgio (Università di Pavia), Dr. I. Cristiani (Università di Pavia)

### Monographic schools

*Photoclass*, photovoltaic measurement training course, European Solar Test Installation, European Joint Research Centre, Ispra (VA) - Italy 2017.

*Nonlinear Optics and Complexity in Photonic Crystal Fibers and Nanostructures*, “Ettore Majorana” Foundation Centre for Scientific Culture, Erice (TP) - Italy, 2011.

*Complex Phenomena in Nonlinear Physics*, “Ettore Majorana” Foundation Centre for Scientific Culture, Erice (TP) - Italy, 2009.

*Quantum Coherence in Solid State Systems*, “Enrico Fermi” International School of Physics of Italian Physical Society, Varenna (LC) - Italy, 2008.

*Winter College on Fibre Optics, Fibre Lasers and Sensors*, “Abdus Salam” International Centre for Theoretical Physics, Trieste - Italy, 2007.

#### Other

Formation project “From material science to molecular biomedicine”, by Università di Pavia in partnership with Regione Lombardia (Pavia, Italy) 2008.

## Fields of Interest

Photovoltaic materials, thin films, film growth, Raman spectroscopy, dielectric spectroscopy, electric, dielectric, and optical properties of materials, phase transitions, out-of-equilibrium phenomena, disordered solids, perovskite crystals, diffraction and diffractive phenomena, microscopy, nonlinear optics, photorefractive solitons.

## Research experiences

*Dipartimento di Ingegneria Industriale e dell'Informazione (Department of Electrical, Computer, and Biomedical Engineering)*, Università di Pavia (Pavia, Italy) - “Borsista” (“Grant Holder”) - “Studio di microscopia a due fotoni” (“Study of two-photons microscopy”) - July 2015 - January 2016.

*Dipartimento di Fisica (Physics Department)*, “Sapienza” Università di Roma (Roma, Italy) - “Assegnista” (“Research Fellow”) - “Sapienza” University, 2012 Research Project “Generazione di shock ottici non-lineari” (“Generation of nonlinear optical shocks”) - February 2014 - June 2015.

*Dipartimento di Fisica (Physics Department)*, “Sapienza” Università di Roma (Roma, Italy) - “Giovane ricercatore” (“Young Researcher”) in the FIRB research project “PHOCOS” (*Spatial soliton composites bridging PHOTorefractive and Cavity Optical Structures*), January 2012 - January 2014.

*Dipartimento di Ingegneria Elettrica e dell'Informazione (Electric & Information Engineering Department)*, Università degli Studi de L'Aquila (L'Aquila, Italy) - “Giovane ricercatore” (“Young Researcher”) in the FIRB research project “PHOCOS” (*Spatial soliton composites bridging PHOTorefractive and Cavity Optical Structures*), October 2010 - December 2011.

*Département d'Optique (Optics Department)*, Université de la Franche-Comté (Besançon, France) - Contract researcher, March-November 2010.

*Dipartimento di Elettronica (Electronics Department)*, Università di Pavia (Pavia, Italy) - Task assignment: *Experimental study of propagation of intense laser beams in crystals*, November 2009 - April 2010.

Participation in the PRIN, *Programma di Ricerca di Rilevante Interesse Nazionale (Research Program with Considerable National Importance)*, project of the Italian Ministry of University and Scientific Research - Research project: *Numerical and experimental study of innovative solutions for the compensation of distortion due to dispersion and nonlinearity in high-bit-rate optical-communication systems. Experimental analysis and optimization of different integrated devices for optical-phase-conjugation*, December 2008 - December 2009.

Participation in the FIRB, *Futuro in Ricerca (Future in Research)*, project of the Italian Ministry of University and Scientific Research - Research project: *Software and communication platforms for high-performance collaborative grid*, 2008.

*Dipartimento di Informatica & Sistemistica (Computer Science & Systems Department)*, Università di Pavia (Pavia, Italy) - Task assignment: *Experimental study of optical properties of doped ferroelectric crystals*, June-October 2006.

*European Synchrotron Radiation Facility (Grenoble, France)*- Experimental campaign on physics of matter: *Local structure of liquid gallium in Ga nanoparticles by Ga-K edge EXAFS*, proposed by the Chemistry-physics Department "M. Rolla" and Physics Department "A. Volta" - Università di Pavia (Pavia, Italy), September 2005.

*European Synchrotron Radiation Facility (Grenoble, France)*- Experimental campaign on physics of matter: *Possible formation of Ga-Ga dimers near the melting point in gallium thin layers*. proposed by the Chemistry-physics Department "M. Rolla" and Physics Department "A. Volta" - Università di Pavia (Pavia, Italy), December 2004.

## Main publications

The complete list of publications can be found at the following website:  
[sites.google.com/site/jacopoparravicinien/publications](https://sites.google.com/site/jacopoparravicinien/publications).

J. Parravicini, E. DelRe, A.J. Agranat, & GB. Parravicini, "Liquid-solid directional composites and anisotropic dipolar phases of polar nanoregions in disordered perovskite", *Nanoscale* Vol. 9, 9572 (2017).

R. Martínez Lorente, J. Parravicini, M. Brambilla, L. Columbo, F. Prati, C. Rizza, A.J. Agranat, & E. DelRe, "Scalable electro-optic control of localized bistable switching in broad-area VCSELs using reconfigurable funnel waveguides", *Phys. Rev. Appl.* Vol. 7, 064004 (2017).

J. Parravicini, M. Acciarri, A. Lomuscio, M. Murabito, A. Le Donne, A. Gasparotto, & S. Binetti, "Gallium in-depth profile in bromine etched CIGS thin films inspected by Raman spectroscopy", *Appl. Spectros.* Vol. 71, 1334-1339 (2017).

J. Parravicini, L. Tartara, E. Hasani & A. Tomaselli, "Fast calculation of the line-spread-function by transversal direction decoupling", *J. Opt.* Vol. 18, 075609 (2016).

J. Parravicini, E. DelRe, A.J. Agranat & GB. Parravicini, "Macroscopic response and directional disorder dynamics in chemically substituted ferroelectrics", *Phys. Rev. B* Vol. 93, 094203 (2016).

F. Di Mei, D. Pierangeli, J. Parravicini, C. Conti, A.J. Agranat & E. DelRe, "Observation of diffraction cancellation for nonparaxial beams in the scale-free-optics regime", *Phys. Rev. A* Vol. 92, 013835 (2015).

D. Pierangeli, M. Flammini, F. Di Mei, J. Parravicini, C.E.M. de Oliveira, A.J. Agranat & E. DelRe, "Continuous solitons in a lattice nonlinearity", *Phys. Rev. Lett.* Vol. 114, 203901 (2015).

J. Parravicini, R. Martínez Lorente, F. Di Mei, D. Pierangeli, A.J. Agranat & E. DelRe, "Volume integrated phase-modulator based on funnel waveguides for reconfigurable miniaturized optical circuits", *Opt. Lett.* Vol. 40, 1386 (2015).

E. DelRe, F. Di Mei, J. Parravicini, GB. Parravicini, A.J. Agranat & C. Conti, "Subwavelength anti-diffracting beams propagating over more than 1000 Rayleigh lengths", *Nat. Photonics* Vol. 9, 228 (2015).

- D. Pierangeli, F. Di Mei, J. Parravicini, G.B. Parravicini, A.J. Agranat, C. Conti & E. DelRe "Observation of an intrinsic nonlinearity in the electro-optic response of freezing relaxors ferroelectrics", *Opt. Mater. Express* Vol. 4, 1487 (2014).
- J. Parravicini, A.J. Agranat, C. Conti & E. DelRe, "Rejuvenation in scale-free optics and enhanced diffraction cancellation life-time", *Opt. Express* Vol. 20, 27382 (2012).
- J. Parravicini, A.J. Agranat, C. Conti & E. DelRe, "Equalizing disordered ferroelectrics for diffraction cancellation", *Appl. Phys. Lett.* Vol. 101, 111104 (2012).
- E. DelRe, A. Pierangelo, J. Parravicini, S. Gentilini & A.J. Agranat, "Funnel-based biomimetic volume optics", *Opt. Express* Vol. 20, 16631 (2012).
- J. Parravicini, C. Conti, A.J. Agranat & E. DelRe, "Programming scale-free optics in disordered ferroelectrics", *Opt. Lett.* Vol. 37, 2355 (2012).
- J. Parravicini, J. Safioui, M. Chauvet, P. Minzioni & V. Degiorgio, "All-optical technique to measure the pyroelectric coefficient in electro-optic crystals", *J. Appl. Phys.* Vol. 109, 033106 (2011).
- A. Sassella, D. Braga, M. Campione, T. Ciabattini, M. Moret, J. Parravicini, A. Sassella & G.B. Parravicini, "Probing phase transitions and stability of organic semiconductor single crystals by dielectric spectroscopy", *J. Appl. Phys.* Vol. 109, 013529 (2011).
- J. Parravicini, P. Minzioni, V. Degiorgio & E. DelRe, "Observation of nonlinear Airy-like beam evolution in Lithium-Niobate", *Opt. Lett.* Vol. 34, 3908 (2009).

## Awards and Recognitions

"Augusto Righi" prize for scientific industry of the *Società Italiana di Fisica (Italian Physical Society)*, for young physicists (2008).

Featuring of the paper "Subwavelength anti-diffracting beams propagating over more than 1,000 Rayleigh lengths" in the section "News&Views" of the Journal "Nature Photonics" Vol. 9, 213-214 (2015).

## Teaching Activities

### Academical

Tutorial seminars for the course of *Photonics* - Engineering Faculty of Università di Pavia, 2006-2009.

Tutorial seminars for the course of *Nonlinear Optics* - Engineering Faculty of Università di Pavia, 2006-2009.

Tutorial seminars for the course of *Electromagnetism* - Engineering Faculty of Università de L'Aquila, 2010-2012.

Teaching assistant for the course of *General Physics* - Engineering Faculty of "Sapienza", Università di Roma, 2013-2015.

Tutorial laboratory seminars for the course of *Materials and Devices for the Energy* - School of Mathematical, Physical, Natural Sciences, Università di Milano-Bicocca, 2016-2017.

Assistant supervisor of 3 M.D. ("Laurea Magistrale"), dissertations in Material Science (2016-2017).

### Educational

Contributions to educational exhibitions and initiatives (2002-2012) on several scientific topics (e.g. light, energy, astronomy, atmosphere, science history) in alliance with: *Physics & Mathematics Department* of Università dell'Insubria; *Physics Department* and *Applied General Physics Institute* of Università di Milano; *Euresis Association*.

"Meet me tonight - researchers meet the city" (Milano, Italy, 2017).

## Management Activities

FIRB research project "*PHOCOS*" - Setting up of a nonlinear optics laboratory: planning of the experimental setup and management of about € 30 000 on behalf of prof. E. Del Re, principal investigator of the project (2010-2013).

"Sapienza" University research project "*Scale-free optics in disordered ferroelectrics*" - Management of about € 2 000 as leading scientist of the project (2014).

"Sapienza" University research project "*Programmable out-of-equilibrium perovskite crystals*" - Management of about € 3 000 as leading scientist of the project (2015).

## Miscellaneous

*Languages:* Italian (mother), French (very good), English (good).

*Main Computer Skills:* MATLAB, Origin, L<sup>A</sup>T<sub>E</sub>X, Office Package, LabView, Autodesk 3ds Max.

*Affiliations:* SIF, Società Italiana di Fisica (Italian Physical Society, since 2007); OSA, Optical Society of America (since 2006).

*Reviewer* of OSA reviews.

## Personals activities

Classical languages (Greek, Latin), reading classics, listening to classical music, art and architecture, singing choral folk songs, playing piano & organ, reading and writing poetry and reviews, sailing & skiing.

## References

Eugenio DelRe  
Assistant Professor of Physics  
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Last updated: October 9, 2017