

# Curriculum Vitae

Jacopo Bertolotti

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## Professional experience

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**February 2020 - Present:** Associate Professor at the University of Exeter (United Kingdom).

**November 2016 - February 2020:** Senior Lecturer at the University of Exeter (United Kingdom).

**September 2013 - November 2016:** Lecturer at the University of Exeter (United Kingdom).

**March 2013 - August 2013:** Postdoctoral fellow at the Institut Langevin, ESPCI ParisTech (France).

**January 2012 - December 2012:** Research fellow at the University of Twente (The Netherlands).

**December 2010 - December 2012:** Research fellow at the University of Florence (Italy).

**January 2011 - December 2011:** Guest Scientist at the University of Twente (The Netherlands).

**April 2010 - December 2010:** Research fellow at the University of Twente (The Netherlands) on the project *Breakdown of universal transport: is there symmetry between absorption and gain?*

**January 2008 - April 2010:** Postdoctoral fellow at the European Laboratory for Non-Linear Spectroscopy (LENS) in Florence (Italy) on the project *Transport of light in disordered systems*.

**January 2005 - December 2007:** PhD fellowship at the University of Florence (Italy).

**May 2004 - December 2004** Fellowship at the University of Florence (Italy) on the project *Random lasing*.

## **Career breaks**

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**Paternity leave:** 13 June - 27 June 2018

**Parental leave:** 8 October - 3 December 2018

## **Education**

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**20 February 2008:** PhD in Physics at the University of Florence (Italy) with a thesis entitled "*Light transport beyond diffusion*".

**27 April 2004:** Italian Degree ("Laurea") in Physics at the University of Florence with a thesis entitled "*Study on light localization in 1D disordered systems*".

## **Prizes and Honors**

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**Philip Leverhulme Prize 2015** for Physics (100 k£).

**Moseley Medal 2016** IOP (1 k£).

## **Funded projects**

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**EPSRC Quantum Technology Research Hub *QuantIC*** (28 M£ total, co-investigator, 2019)

**DSTL/EPSRC *Looking and Listening in Complex Media*** (443 k£ for the Exeter part, principal investigator, 2019))

**EPSRC Prosperity Partnership *Tailored Electromagnetic and Acoustic Materials*** (2.4 M£ total, co-investigator, 2017)

**Leverhulme research grant: *Prime factorization using light*** (118,672 £, principal investigator, 2016).

**EPSRC reactive: *Workshop: From complex nanophotonics to complex nanodevices*** (12,379 £, principal investigator, 2015).

**Infrastructure Research grant: *Imaging in turbid media using a digital micromirror device*** (12,528 £, principal investigator, 2013). Granted by The Royal Society.

**FIRB "Futuro in Ricerca": *Anomalous transport of light in complex systems*** (600 k€, principal investigator, 2009). Granted by the Italian Ministry of Education, University and Research (MIUR).

## **Invited and keynote talks at international conferences**

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- ONS'19, Anacapri (Italy), 9-11 September 2019.
- TOPIM-TECH, Chania (Greece), 1-6 July 2019.
- Theo Murphy international scientific meeting "Light transport and imaging through complex media", 22-23 January 2018.
- IDMRC8, Wisła (Poland), 23-28 July 2017.
- DINAMO 2017, Siglufjörður (Iceland), 14-19 May 2017.
- EOSAM 2016, Berlin (Germany), 26-30 September 2016.

- JSAP Spring Meeting 2016, Tokyo (Japan), 19-22 March 2016.
- SPIE Photonics Europe, Brussels (Belgium), 3-7 April 2016.
- ISFAP 2015, Bandung (Indonesia), 8-10 October 2015.
- PPNEC 2015, Bad Honnef, Germany, 19-23 April 2015.
- BiOS/Photonics West, San Francisco, California (USA), 7-12 February 2015.
- Progress In Electromagnetics Research Symposium (PIERS), Guangzhou (China), 25-28 August 2014.
- International Workshop on Holography and related technologies (IWH2013), Kitami, Hokkaido (Japan), 15-17 October 2013.
- Computational Optical Sensing and Imaging (COSI), Arlington, Virginia (USA), 12-16 May 2013.
- European Conference on Lasers and Electro-Optics (CLEO/Europe), Munich, Germany, 23-27 June 2013.

#### **Conferences organized**

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- “Complex Nanophotonics Science Camp,” 11-14 August 2019, Cumberland Lodge (UK)
- “PIERS” (*Disordered Photonics* session), 17-20 June 2019, Rome (Italy).
- “Light in Complex Materials,” 8-10 April 2019, Exeter (UK)
- “Complex Nanophotonics Science Camp,” 25-28 July 2017, Cumberland Lodge (UK)
- “Complex Nanophotonics Science Camp,” 18-21 August 2015, Cumberland Lodge (UK)
- “Complex Nanophotonics Science Camp,” 27-30 August 2013, Cumberland Lodge (UK)
- “ATLCS Kick-off meeting,” 11 Mar 2011, Florence (Italy).

#### **Reviewing works**

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Publons public profile: <https://publons.com/a/1168963/>

#### **Current teaching**

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- Mathematics with Physical Applications (PHY2025).
- Electromagnetism II (PHY3051).

#### **Current post-doc supervision**

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- Ulas Gokay
- Yessenia Jauregui-Sánchez

- Joe Shield (second supervisor)

### **Current student supervision**

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- James Laurenson (PhD, first supervisor)
- Rachel Lennon (PhD, second supervisor)
- Euan Humphreys (PhD, second supervisor)
- George Braid (PhD, second supervisor)
- Stuart Kendall (PhD, second supervisor)

### **Alumni**

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- Harry Penketh (moved to: post-doc at the University of Exeter, UK)
- Monika Pietrzyk (moved to: post-doc at the University of Exeter, UK)
- Pramod Kumar (moved to: Director of Research at QuantLase Laboratory, AE)
- Tom Vettenburg (moved to: Lecturer at the University of Dundee, UK)
- Wonjun Choi (moved to: research fellow at Korea University, KR)
- Ilya Starshinov (moved to: post-doc at the University of Glasgow, UK)
- Alba Maria Paniagua-Diaz (moved to: post-doc at the Jaume I University, E)

### **Book chapters**

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K. Vynck, J. Bertolotti, P. Barthelemy, and D.S. Wiersma, *Superdiffusion of light in Lévy glasses* in *Optical Properties of Photonic Structures: Interplay of Order and Disorder*, edited by Mikhail F. Limonov and Richard De La Rue (Taylor & Francis, 2012).

## Publications in international refereed journals

- I S. Gigan *et al.*, *Roadmap on Wavefront Shaping and deep imaging in complex media*, Journ. of Phys.: Photonics (2022).
- II H. Penketh, W.L. Barnes, and J. Bertolotti, *Implicit image processing with ghost imaging*, Opt. Expr. **30**, 7035 (2022).
- III J. Shields, C. Ruiz de Galarreta, J. Bertolotti, and C.D. Wright, *Enhanced performance and diffusion robustness of phase-change metasurfaces via a hybrid dielectric/plasmonic approach*, Nanomat. **11**, 525 (2021).
- IV C. Ruiz de Galarreta, S. Garcia-Cuevas Carrillo, Y.Y. Au, E. Gemo, L. Trimby, J. Shields, E. Humphreys, J. Faneca, L. Cai, A. Baldycheva, J. Bertolotti, and C.D. Wright, *Tunable optical metasurfaces enabled by chalcogenide phase-change materials: from the visible to the THz*, Journ. of Optics **22**, 114001 (2020).
- V A.S. Laurenson, J. Bertolotti, and V.V. Kruglyak, *Bloch oscillations of backward volume magnetostatic spin waves*, Phys. Rev. B **102**, 054416 (2020).
- VI C. Ruiz de Galarreta, I. Sinev, A. M Alexeev, P. Trofimov, K. Ladutenko, S. Garcia-Cuevas Carrillo, E. Gemo, A. Baldycheva, J. Bertolotti, and C.D. Wright, *Reconfigurable multilevel control of hybrid all-dielectric phase-change metasurfaces*, Optica **7**, 476 (2020).
- VII H. Penketh, J. Bertolotti, and W.L. Barnes, *Optimal position of an emitter in a wavelength-scale parabolic reflector*, Appl. Opt. **58**, 7957 (2019).
- VIII G. Jacucci, J. Bertolotti, and S. Vignolini, *Role of anisotropy and refractive index in scattering and whiteness optimization*, Adv. Opt. Mat. **7**, 1900980 (2019).
- IX R.I. Herath, S.M. Hornett, T.S. Seifert, G. Jakob, M. Kläui, J. Bertolotti, T. Kampfrath, and E. Hendry, *Impact of pump wavelength on terahertz emission of a cavity-enhanced spintronic trilayer*, Appl. Phys. Lett. **114**, 041107 (2019).
- X T. Vettenburg, S.A.R. Horsley, and J. Bertolotti, *Calculating coherent light-wave propagation in large heterogeneous media*, Opt. Expr. **27**, 11946 (2019).
- XI A.M. Paniagua-Diaz, I. Starshynov, N. Fayard, A. Goetschy, R. Pierrat, R. Carminati, and J. Bertolotti, *Blind Ghost Imaging*, Optica **6**, 460 (2019).
- XII M. Gaio, D. Saxena, J. Bertolotti, D. Pisignano, A. Camposeo, and R. Sapienza, *A nanophotonic laser on a graph*, Nat. Comm. **10**, 226 (2019).
- XIII G. Jacucci, O.D. Onelli, A. De Luca, J. Bertolotti, R. Sapienza and S. Vignolini, *Coherent backscattering of light by an anisotropic biological network*, Int. Focus **9**, 20180050 (2018).
- XIV A.M. Paniagua-Diaz, A. Ghita, T. Vettenburg, N. Stone, and J. Bertolotti, *Enhanced deep detection of Raman scattered light by wavefront shaping*, Opt. Expr. **33**, 33565 (2018).

- XV E. Yuce, J. Lian, S. Sokolov, J. Bertolotti, S. Combrie, G. Lehoucq, A. De Rossi, and A.P. Mosk, *Adaptive control of necklace states in a photonic crystal waveguide*, ACS Photonics **5**, 3984 (2018).
- XVI I. Starshynov, A.M. Paniagua-Diaz, N. Fayard, A. Goetschy, R. Pierrat, R. Carminati, and J. Bertolotti, *Non-Gaussian Correlations between Reflected and Transmitted Intensity Patterns Emerging from Opaque Disordered Media*, Phys. Rev. X **8**, 021041 (2018).
- XVII M. Hofer, C. Soeller, S. Brasselet, and J. Bertolotti, *Wide field fluorescence epi-microscopy behind a scattering medium enabled by speckle correlations*, Optics Express **26**, 9866 (2018).
- XVIII J. Bertolotti, *Designing disorder*, Nat. Phot. **12**, 59 (2018).
- XIX C. Ruiz de Galarreta, A.M. Alexeev, Y.-Y. Au, M. Lopez-Garcia, M. Klemm, M. Cryan, J. Bertolotti, and C.D. Wright, *Nonvolatile reconfigurable phase-change metadevices for beam steering in the near infrared*, Adv. Func. Mat. **28**, 1704993 (2018).
- XX W. Choi, C. Yin, I.R. Hooper, W.L. Barnes, and J. Bertolotti, *Absence of Anderson localization in certain random lattices*, Phys. Rev. E **96**, 022122 (2017).
- XXI D. Akbulut, T. Strudley, J. Bertolotti, E.P.A.M. Bakkers, A. Lagendijk, O.L. Muskens, W.L. Vos, and Allard P. Mosk, "Optical transmission matrix as a probe of the photonic strength", Phys. Rev. A **94**, 043817 (2016).
- XXII I. Starshinov, J. Bertolotti, J. Anders, *Quantum correlation of light scattered by disordered media*, Optics Express **5**, 4662 (2016).
- XXIII J. Bertolotti, *Multiple scattering: Unravelling the tangle*, Nature Physics (2015).
- XXIV S. Schott, J. Bertolotti, J.-F. Léger, L. Bourdieu, S. Gigan, *Characterization of the angular memory effect of scattered light in biological tissues*, Optics Express **23**, 13505 (2015).
- XXV H. Yilmaz, E.G. van Putten, J. Bertolotti, A. Lagendijk, W.L. Vos, A.P. Mosk, *Speckle correlation resolution enhancement of wide-field fluorescence imaging*, Optica **2**, 424 (2015).
- XXVI J. Bertolotti, *Non-invasive imaging: Peeking through the curtain*, Nature Photonics **8**, 751 (2014).
- XXVII S.A. Goorden, J. Bertolotti, A.P. Mosk, *Superpixel-based spatial amplitude and phase modulation using a digital micromirror device*, Optics Express **22**, 17999 (2014).
- XXVIII J. Bertolotti, E.G. van Putten, C. Blum, A. Lagendijk, W.L. Vos, A.P. Mosk, *Non-invasive imaging through opaque scattering layers*, Nature **491**, 232 (2012).  
(selected by PhysicsWorld as one of the "Top 10 breakthroughs for 2012")

- XXIX M. Burrese, V. Radhalakshmi, R. Savo, J. Bertolotti, K. Vynck, D.S. Wiersma, *Weak localization of light in superdiffusive random systems*, Phys. Rev. Lett. **108**, 110604 (2012).
- XXX E.G. van Putten, D. Akbulut, J. Bertolotti, W.L. Vos, A. Lagendijk, A.P. Mosk, *Scattering Lens Resolves Sub-100 nm Structures with Visible Light*, Phys. Rev. Lett. **106**, 193905 (2011).
- XXXI J. Bertolotti, K. Vynck, D.S. Wiersma, *Multiple scattering of light in superdiffusive media*, Phys. Rev. Lett. **105**, 163902 (2010).
- XXXII P. Barthelemy, J. Bertolotti, K. Vynck, S. Lepri, D.S. Wiersma, *Role of quenching on superdiffusive transport in two-dimensional random media*, Phys. Rev. E **82**, 011101 (2010).
- XXXIII J. Bertolotti, K. Vynck, L. Pattelli, P. Barthelemy, S. Lepri, D.S. Wiersma, *Engineering disorder in superdiffusive Lévy glasses*, Adv. Func. Mat. **20**, 965 (2010).
- XXXIV P.D. García, R. Sapienza, J. Bertolotti, M.D. Martín, Á. Blanco, A. Altube, L. Viña, D.S. Wiersma, C. López, *Resonant light transport through Mie modes in photonic glasses*, Phys. Rev A **78**, 023823 (2008).
- XXXV P. Barthelemy, J. Bertolotti, D.S. Wiersma, *A Lévy flight for light*, Nature **453**, 495 (2008).
- XXXVI R. Sapienza, P.D. García, J. Bertolotti, M.D. Martín, Á. Blanco, L. Viña, C. López, D.S. Wiersma, *Observation of Resonant Behavior in the Energy Velocity of Diffused Light*, Phys. Rev. Lett. **99**, 233902 (2007).
- XXXVII J. Bertolotti, M. Galli, R. Sapienza, M. Ghulinyan, S. Gottardo, L.C. Andreani, L. Pavesi, D.S. Wiersma, *Wave transport in random systems: Multiple resonance character of necklace modes and their statistical behavior*, Phys. Rev. E **74**, 035602 (2006).
- XXXVIII M. Ghulinyan, M. Galli, C. Toninelli, J. Bertolotti, S. Gottardo, F. Marabelli, D.S. Wiersma, L. Pavesi, L.C. Andreani, *Wide-band transmission of nondistorted slow waves in one-dimensional optical superlattices*, App. Phys. Lett. **88**, 241103 (2006).
- XXXIX A.C. Arsenault, T.J. Clark, G. Von Freymann, L. Cademartiri, R. Sapienza, J. Bertolotti, E. Vekris, S. Wong, V. Kitaev, I. Manners, R.Z. Wang, S. John, D.S. Wiersma, G.A. Ozin, *From color fingerprinting to the control of photoluminescence in elastic photonic crystals*, Nature Mat. **5**, 179 (2006).
- XL L. Cademartiri, J. Bertolotti, R. Sapienza, D.S. Wiersma, G. von Freymann, G.A. Ozin, *Multigram scale, solventless, and diffusion-controlled route to highly monodisperse PbS nanocrystals*, J. Phys. Chem. B **110**, 671 (2006).
- XLI L. Cademartiri, G. von Freymann, A.C. Arsenault, J. Bertolotti, D.S. Wiersma, V. Kitaev, G.A. Ozin, *Nanocrystals as precursors for flexible functional films*, Small **1** 1184 (2005).

XLII J. Bertolotti, S. Gottardo, D.S Wiersma, M. Ghulinyan, L. Pavesi, *Optical necklace states in Anderson localized 1D systems*, Phys. Rev. Lett. **94**, 113903 (2005).