

PABLO BIANUCCI: CURRICULUM VITAE

Personal Information

Department of Physics
Concordia University
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Employment

Associate Professor, Department of Physics, Concordia University 2017-Present
Assistant Professor, Department of Physics, Concordia University 2012-2017

Education

PhD in Physics, University of Texas at Austin 2007
Dissertation: “Optical Resonators and Quantum Dots: An Excursion into Quantum Optics, Quantum Information and Photonics”
Supervisor: Chih-Kang Shih

Licenciado en Ciencias Físicas (Licentiate in Physical Sciences), 2001
Universidad de Buenos Aires, Buenos Aires, Argentina
Thesis: “Decoherencia en mapas cuánticos” (“Decoherence in quantum maps”)
Supervisor: Juan Pablo Paz

Research experience

CIHR Postdoctoral Fellow, Department of Engineering Physics, 2011–2012
École Polytechnique de Montréal (Supervisor: Dr. Yves-Alain Peter)

Postdoctoral Fellow, Department of Electrical and Computer Engineering, 2010–2011
McGill University (Supervisor: Dr. Zetian Mi)

Postdoctoral Fellow, Department of Physics, University of Alberta 2007–2010
(Supervisors: Dr. Al Meldrum, Dr. J. G. C. Veinot)

Dissertation research / Graduate Research Assistant, 2002–2007
Department of Physics, The University of Texas at Austin (Supervisor: Dr. Chih-Kang Shih)

Research interests

- Optical properties of nanomaterials and their study
- Interaction of nanomaterials with confined optical systems (optical resonators)
- Physics and applications of photonic devices, both passive and active
- Using optical resonators as sensors

Research funding

- MRIF Project Quebec-Bavaria (CAD \$12,000) 2024–2025
- FRQNT Team grant (CAD \$150,000, 33%) 2023–2026
- Concordia Team Start-up/Accelerator grant (PI: C. DeWolf)(CAD \$40,000, 33%) 2022
- NSERC RTI (PI: O. Liboiron-Ladouceur, McGill)(CAD \$146,339, 25%) 2015
- Compute Canada’s Resource Allocation Competition 2021 (CAD \$16,324) 2021
- Concordia Spring 2020 Research Support award (CAD \$6,500) 2020
- NSERC ENGAGE (with One Silicon Chip Photonics Inc., CAD \$25,000) 2019
- NSERC Discovery grant (CAD \$34,000/year) 2019–2024
- Mitacs Accelerate (with One Silicon Chip Photonics Inc., CAD \$15,000) 2019
- IDEaS reseach contract (Department of Defense, CAD \$42,885 out of \$112,720) 2019
- NSERC ENGAGE (with O/E Land Inc., CAD \$25,000) 2016
- NSERC Research Tools and Instrumentation (PI: Z. Mi, McGill) (CAD \$150,000, 7%) 2015
- NSERC RTI (PI: R. Morandotti, INRS-EMT)(CAD \$150,000, 20%) 2015
- FRQNT Establishment of new university researchers (CAD \$20,000) 2015–2016
- FRQNT Establishment of new university researchers (CAD \$56,682) 2014–2015
- Concordia University Team Seed Grant (PI: John Capobianco) (CAD \$13,500) 2013
- NSERC Discovery grant (CAD \$26,000/year) 2013–2018
- Start-up grant from Concordia University (CAD \$135,000) 2012

Refereed publications

Current h-index according to Web of Science: 21
 Current h-index according to Google Scholar: 25

44. A. Hotte-Kilburn* and **P. Bianucci**, “Implementation of the SSH Model in an Optical Ring Resonator”, *J. Opt.* **26**, 065006 (2024)
43. X. Jin*, L. Razzari, and **P. Bianucci**, “Improving topological confinement using asymmetric elements”, *Adv. Photon. Res.*, 202200089 (2022)
42. M. Couillard* and **P. Bianucci**, “Measurement of absolute radius, refractive index, and dispersion of a long cylinder”, *Opt. Express* **30**, 26754–26748 (2022) arXiv:2205.02407
41. K. McGarvey* and **P. Bianucci**, “General treatment of dielectric perturbations in optical rings”, *Adv. Photon. Nexus* **1**, 016004 (2022)
40. S. M. Mirjalili*, H. Taleb, M. Z. Kabir, and **P. Bianucci**, “Design optimization of orbital angular momentum fibers using the gray wolf optimizer”, *Appl. Opt.* **59**, 6181–6190 (2020)
39. H. Khattak, **P. Bianucci**, and A. D. Slepko, “Linking plasma formation in grapes to microwaves resonances of aqueous dimers”, *Proceeding of the National Academy of Sciences* **116**, 4000-4005 (2019)
38. K. McGarvey-Lechable* and **P. Bianucci**, “Bloch-Floquet waves in optical ring resonators”, *Physical Review B* **97**, 214204 (2018) arXiv:1803.11312
37. A. Hassanpour*, S. Shen, and **P. Bianucci**, “Na-doped oriented ZnO nanorod-arrays: Insights into their aqueous growth design, crystal structure and optical properties”, *MRS Communications* **8**, 570–576 (2018)
36. T. Hamidfar*, K. V. Tokmakov, B. J. Mangan, R. S. Windeler, A. V. Dmitriev, D. L. P. Vitullo, **P. Bianucci**, and M. Sumetsky, “Localization of light in an optical microcapillary induced by a droplet”, *Optica* **5**, 382–388 (2018)
35. M. J. Safdari*, S. M. Mirjalili, **P. Bianucci**, X. Zhang, “A novel multi-objective optimization framework for designing photonic crystal sensors”, *Applied Optics* **58**, 1950–1957 (2018)
34. A. Hassanpour*, P. Guo, S. Shen, and **P. Bianucci**, “The effect of cation doping on morphology, optical and structural properties of highly oriented wurtzite ZnO nanorod-arrays grown by a hydrothermal method”, *Nanotechnology* **28**, 435707 (2017)

33. T. Hamidfar*, A. Dmitriev, B. Magdan, **P. Bianucci**, and M. Sumetsky, “Surface nanoscale axial photonics at a capillary fiber”, *Optics Letters* **42**, 3060 (2017)
32. K. McGarvey-Lechable*, T. Hamidfar*, D. Patel, L. Xu, D. V. Plant, and **P. Bianucci**, “Slow light in mass-produced, dispersion-engineered photonic crystal ring resonators”, *Optics Express* **25**, 3916 (2017)
31. A. Hassanpour*, N. Bogdan, J. A. Capobianco, and **P. Bianucci**, “Hydrothermal selective growth of offow-aspect-ratio isolated ZnO nanorods”, *Materials & Design* **119**, 464 (2017)
30. H. Ghali*, **P. Bianucci**, and Y.-A. Peter, “Wavelength shift in a whispering gallery microdisk due to bacterial sensing: A theoretical approach”, *Sensing and Bio-Sensing Research* **13**, 9 (2017)
29. **P. Bianucci**, “Optical microbottle resonators for sensing”, *Sensors* **16**, 1841 (2016)
28. H. Ghali, H. Chibli, J. L. Nadeau, **P. Bianucci**, and Y.-A. Peter, “Real-time detection of *Staphylococcus Aureus* using whispering gallery mode optical microdisks”, *Biosensors* **6**, 20 (2016)
27. K. McGarvey-Lechable, and **P. Bianucci**, “Maximizing slow-light enhancement in one-dimensional photonic crystal ring resonators”, *Optics Express* **22**, 26032 (2014)
26. M. H. Tavakoli-Dastjerdi, M. Djavid, S. Arafin, X. Liu, **P. Bianucci**, Z. Mi, and P. J. Poole, “Optically pumped rolled-up InAs/InGaAsP quantum dash lasers at room temperature”, *Semiconductor Science and Technology* **28**, 094007 (2013)
25. **P. Bianucci**, S. Mukherjee, M. H. Tavakoli-Dastjerdi, P. J. Poole, and Z. Mi, “InGaAsP/InAs quantum dot microtube lasers”, *Applied Physics Letters* **101**, 031104–4 (2012)
24. Z. Tian, **P. Bianucci**, and D. V. Plant, “Fiber Ring Laser Using Optical Fiber Microdisk as Reflection Mirror”, *IEEE Photon. Technol. Lett.* **24**, 1396–1398 (2012)
23. Z. Tian, P. Bianucci, P. J. R. Roche, M. H. Tavakoli-Dastjerdi, Z. Mi, P. J. Poole, A. G. Kirk, and D. V. Plant, “Dynamical thermal effects in InGaAsP microtubes at telecom wavelengths”, *Optics Letters* **37**, 2712–2714 (2012)
22. Z. Mi, and **P. Bianucci**, “When self-organized In(Ga)As/GaAs quantum dot heterostructures roll up: Emerging devices and applications”, *Current Opinion in Solid State and Materials Science* **16**, 52–58 (2012)
21. Z. Tian, V. Veerasubramanian, **P. Bianucci**, Z. Mi, A. G. Kirk, and D. V. Plant, “Selective polarization mode excitation in InGaAs/GaAs microtubes”, *Optics Letters* **36**, 3506–3508 (2011)
20. Z. Tian, V. Veerasubramanian, **P. Bianucci**, S. Mukherjee, Z. Mi, A. G. Kirk, and D. V. Plant, “Single rolled-up InGaAs/GaAs quantum dot microtubes integrated with silicon-on-insulator waveguides”, *Optics Express* **19**, 12164–12171 (2011)
19. **P. Bianucci**, Y.-Y. Zhi, F. Marsiglio, J. Silverstone and A. Meldrum, “Microcavity effects in ensembles of silicon quantum dots coupled to high-Q resonators”, *physica status solidi (a)* **208**, 639–645 (2011)
18. A. Meldrum, **P. Bianucci** and F. Marsiglio, “Modification of ensemble emission rates and luminescence spectra for inhomogeneously broadened distributions of quantum dots coupled to optical microcavities”, *Optics Express* **18**, 10230–10246 (2010)
17. **P. Bianucci**, X. Wang, J. G. C. Veinot and A. Meldrum, “Silicon Nanocrystals on Bottle Resonators: Mode Structure, loss mechanisms and emission dynamics”, *Optics Express* **18**, 8466–8481 (2010)
16. **P. Bianucci**, J. R. Rodríguez, C. Clements, J. G. C. Veinot and A. Meldrum, “Whispering gallery modes in silicon nanocrystal coated microcavities”, *physica status solidi (a)* **206**, 973–975 (2009)
15. **P. Bianucci**, J. R. Rodríguez, C. Clements, J. G. C. Veinot and A. Meldrum, “Silicon nanocrystal luminescence coupled to whispering gallery modes in optical fibers”, *Journal of Applied Physics* **105**, 023108–5 (2009)

14. **Pablo Bianucci**, Chris R. Fietz, John W. Robertson, Gennady Shvets and Chih-Kang Shih, “Observation of simultaneous fast and slow light”, *Physical Review A* **77**, 053816–4 (2008) arXiv:0803.1216
13. J. R. Rodríguez, **P. Bianucci**, J. G. C. Veinot and A. Meldrum, “Whispering gallery modes in hollow cylindrical microcavities containing silicon nanocrystals”, *Applied Physics Letters* **92**, 131119–3 (2008)
12. A. Muller, E. B. Flagg, **P. Bianucci**, X.Y. Wang, D. G. Deppe, W. Ma, J. Zhang, G. J. Salamo, M. Xiao and C. K. Shih, “Resonant fluorescence from a coherently driven semiconductor quantum dot in a cavity”, *Physical Review Letters* **99**, 187402–4 (2007) arXiv:0707.0656
11. **Pablo Bianucci**, Chris R. Fietz, John W. Robertson, Gennady Shvets and Chih-Kang Shih, “Whispering gallery mode microresonators as polarization converters”, *Optics Letters* **32**, 2224–2226 (2007)
10. **Pablo Bianucci**, Chris R. Fietz, John W. Robertson, Gennady Shvets and Chih-Kang Shih, “Polarization conversion in a silica microsphere”, *Optics Express* **15**, 7000–7005 (2007) arXiv:0704.0422
9. Q. Q. Wang, A. Muller, **P. Bianucci**, C. K. Shih, M. T. Cheng and H. J. Zhou and J. B. Han, “Internal and external polarization memory loss in single semiconductor quantum dots”, *Applied Physics Letters* **89**, 142112 (2006)
8. A. Muller, **P. Bianucci**, C. Piermarocchi, M. Fornari, I. C. Robin, R. Andre and C. K. Shih, “Time-resolved photoluminescence spectroscopy of individual Te impurity centers in ZnSe”, *Physical Review B* **73**, 081306 (2006) cond-mat/0503419
7. Q. Q. Wang, A. Muller, M. T. Cheng, H. J. Zhou, **P. Bianucci**, and C. K. Shih, “Coherent Control of a V-Type Three-Level System in a Single Quantum Dot”, *Physical Review Letters* **95**, 187404–4 (2005) cond-mat/0509440
6. Q. Q. Wang, A. Muller, **P. Bianucci**, E. Rossi, Q. K. Xue, T. Takagahara, A. H. MacDonald, and C. K. Shih, “Decoherence processes during active manipulation of excitonic qubits in semiconductor quantum dots”, *Physical Review B* **72**, 035306 (2005) cond-mat/0404465
5. Q. Q. Wang, A. Muller, **P. Bianucci**, C. K. Shih, and Q. K. Xue, “Quality factors of qubit rotations in single semiconductor quantum dots”, *Applied Physics Letters* **87**, 031904 (2005)
4. **P. Bianucci**, A. Muller, Q. Q. Wang, C. K. Shih, C. Piermarocchi, Q. K. Xue, “Experimental realization of the one qubit Deutsch-Jozsa algorithm in a quantum dot”, *Physical Review B* **69**, 161303R–4 (2004) cond-mat/0401226
3. A. Muller, Q. Q. Wang, **P. Bianucci**, C. K. Shih, Q. K. Xue, “Determination of anisotropic dipole moments in self-assembled quantum dots using Rabi oscillations”, *Applied Physics Letters* **84**, 981 (2004) cond-mat/0404398
2. **Pablo Bianucci**, Juan Pablo Paz, Marcos Saraceno, “Decoherence for classically chaotic quantum maps”, *Physical Review E* **65**, 046226 (2002) quant-ph/0110033
1. **Pablo Bianucci**, Cesar Miquel, Juan Pablo Paz and Marcos Saraceno, “Discrete Wigner functions and the phase space representation of quantum computers”, *Physics Letters A* **297**, 353 (2002) quant-ph/0106091

Refereed conference proceedings

5. Kathleen McGarvey and **Pablo Bianucci**, “Optical rings as periodic systems”, *Proc SPIE* **11987**, 126–134 (2022)
4. Francis Vanier, **Pablo Bianucci**, Nicolas Godbout, Martin Rochette, and Yves-Alain Peter, “As₂S₃ Microspheres With Near Absorption-Limited Quality Factor”, *IEEE/LEOS International Conference on Optical MEMS and Nanophotonics*, 45–46 (2012)
3. Z. Mi, **P. Bianucci**, F. Li, Z. Tian, V. Veerasubramanian, A. G. Kirk, and D. V. Plant, “Self-organized InAs quantum dot tube lasers and integrated optoelectronics on Si”, *Proc. SPIE* **7943**, 79431C–10 (2011)

2. **P. Bianucci**, J. G. C. Veinot, and A. Meldrum, “Coupling Silicon Nanocrystal Fluorescence to Optical Bottle Resonators”, *ECS Transactions* **28**, 297–301 (2010)
1. **P. Bianucci**, J. R. Rodríguez, F. C. Lenz, J. G. C. Veinot, and A. Meldrum, “Mode structure in the luminescence of silicon nanocrystals in cylindrical microcavities”, *Physica E* **41**, 1107–1100 (2009)

Non-refereed publications

- A. Muller, E.B. Flagg, **P. Bianucci**, D. G. Deppe, W. Ma, J. Zhang, G. J. Salamo and C. K. Shih, “Coherently driven non-classical light emission from a quantum dot”, (2007) arXiv:0707.3808
- OSA Spotlight article summary for Y. Zhi *et al.*, *JOSA B* **30** 3079–3085 (2013) at <http://www.opticsinfobase.org/spotlight/summary.cfm?uri=josab-30-11-3079>.

Book chapters

1. **P. Bianucci**, M. H. Tavakoli Dastjerdi, M. Djavid, and Z. Mi *Rolled-Up Semiconductor Tube Optical Cavities*, “High-Speed Photonics Interconnects” L. Chrostowski, K. Iniewski (Eds.), CRC Press, April 2013.

Awards

- Petro-Canada Young Innovator Award (\$10,000), Concordia University 2013
- Postdoctoral Fellowship (\$45,000 per annum), Canadian Institutes for Health Research 2011-2012
- Professional Development Award (\$500), The University of Texas at Austin 2007
- David F. Bruton Jr. Graduate Fellowship (\$1,000), The University of Texas at Austin 2005
- “Estímulo” Fellowship (\$3,000), Universidad de Buenos Aires 2000

Invited and seminar talks

- Center for Complex Quantum Systems / Condensed Matter Seminar, May 2nd, 2024m University of Texas at Austin, Austin, Texas, USA: “Condensed-matter inspired photonics”
- Lecture. February 6th 2024, Max Planck Insitute for the Science of Light, Erlangen, Bavaria, Germany: “Trapping light for fun (and profit?)”
- Department of Physics & Astronomy Seminar, January 17th 2024, Trent University, Peterborough, Ontario, Canada: “Trapping light for fun (and profit?)”
- Conference, Département de physique et astronomie, October 6th 2023, Université de Moncton, Moncton, New Brunswick, Canada: “Trapping light for fun (and profit?)”
- Department of Physics Colloquium, July 6th 2023, Universidad de Buenos Aires, Buenos Aires, Argentina: “Fotónica inspirada en la Materia Condensada”
- CUBCAPS Undergraduate Research Day, March 24th 2023, Concordia University, Montreal, Quebec, Canada: “Trapping light for fun (and profit?)”
- IEEE Photonics Society Seminar, January 12th 2023, University of Ottawa, Ottawa, Ontario, Canada: “Condensed-matter inspired photonics”
- Department of Physics Colloquium, November 18th 2022, University of Alberta, Edmonton, Alberta, Canada: “Condensed-matter inspired photonics”
- Physics Colloquium, September 7th 2022, Concordia University, Montreal, Quebec, Canada: “Condensed-matter-inspired photonics with optical rings”
- COPL Annual Meeting, June 16th 2022, Concordia University, Montreal, Quebec, Canada: “Condensed-matter-inspired photonics with optical rings”

- Outreach talk for CEGEP students, February 25th 2022, Dawson College, “Tightly squeezing light in small spaces”
- Invited talk for the OSA student chapter, December 10th 2020, École de Technologie Supérieure, “Trapping light for fun (and profit?)”
- Physics Colloquium, October 30th 2019, Department of Physics, Concordia University, Montreal, Quebec, Canada: “Trapping light for fun (and profit?)”
- Quantum Photonics Seminar, September 25th 2019, Department of Physics, University of Ottawa, Ottawa, Ontario, Canada: “Trapping light for fun (and profit?)”
- 2019 CAP Lecture Tour, March 22th 2019, Department of Physics, St. Francis Xavier University, Antigonish, Nova Scotia, Canada: “Tightly squeezing light in small spaces”
- 2019 CAP Lecture Tour, March 21th 2019, Department of Physics, Acadia University, Wolfville, Nova Scotia, Canada: “Tightly squeezing light in small spaces”
- 2019 CAP Lecture Tour, March 20th 2019, Department of Physics, Université de Moncton, Moncton, New Brunswick, Canada: “Tightly squeezing light in small spaces”
- 2019 CAP Lecture Tour, March 19th 2019, Department of Physics, University of New Brunswick, Fredericton, New Brunswick, Canada: “Tightly squeezing light in small spaces”
- Concordia Undergraduate Physics Students Symposium, November 6th 2017, Department of Physics, Concordia University, Montreal, Ontario, Canada: “Playing with matter and light in small spaces”
- Seminar, October 15th 2015, Department of Physics, Queen’s University, Kingston, Ontario, Canada: “Tightly squeezing light in small spaces”
- 2015 CAP Lecture Tour, March 27th 2015, Department of Physics, University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada: “Tightly squeezing light in small spaces”
- 2015 CAP Lecture Tour, March 26th 2015, Department of Physics, Mt. Allison University, Sackville, New Brunswick, Canada: “Tightly squeezing light in small spaces”
- 2015 CAP Lecture Tour, March 26th 2015, Department of Physics, Université de Moncton, Moncton, New Brunswick, Canada: “Tightly squeezing light in small spaces”
- 2015 CAP Lecture Tour, March 25th 2015, Department of Physics, University of New Brunswick, Fredericton, New Brunswick, Canada: “Tightly squeezing light in small spaces”
- COPL seminar, February 26th 2015, Département de Physique, génie physique et optique, Université Laval, Québec, Quebec, Canada: “Tailoring the interaction between matter and light with optical microresonators”
- 2015 CAP Lecture Tour, February 24th 2015, Department of Physics, York University, Toronto, Canada: “Tightly squeezing light in small spaces”
- Seminar, November 6th 2014, Institut National de la Recherche Scientifique - Énergie, Matériaux, Télécommunications, Varennes, Quebec, Canada: “Tailoring the interaction between matter and light with optical microresonators”
- Café Scientifique, October 21st 2014, Département de Physique, génie physique et optique, Université Laval, Québec, Quebec, Canada: “Tightly squeezing light in small spaces”
- Invited talk, May 6th 2014, Spring meeting, Institut Transdisciplinaire d’Information Quantique (INTRIQ), Bromont, Quebec, Canada: “Designing photonic crystal ring resonators at the band edge”
- Seminar, October 10th 2013, Department of Physics, McGill University, Montreal, Quebec, Canada: “Optical microresonators: The interplay of light and matter”

- Seminar, January 21st 2013, Brockhouse Institute for Material Research, McMaster University, Hamilton, Ontario, Canada: “Optical microresonators: The interplay of light and matter”
- Physics Colloquium, July 5th 2012, Department of Physics, Universidad de Buenos Aires, Buenos Aires, Argentina: “Microresonadores ópticos: Física y aplicaciones”
- Seminar, February 20th 2012, Department of Physics, Concordia University, Montreal, Quebec, Canada: “Optical micro- and nanoresonators: Playing with light and matter”
- Seminar, February 1st 2012, Département de Physique, Université de Sherbrooke, Sherbrooke, Québec, Canada: “Optical micro- and nanoresonators: Playing with light and matter”
- Seminar, January 17th 2012, Centre Énergie Matériaux Télécommunications, INRS, Varennes, Québec, Canada: “Optical micro- and nanoresonators: Playing with light and matter”
- Physics Colloquium, June 1st 2011, Physics Department, Rochester Institute of Technology, Rochester, New York, USA: “Optical microresonators: Playing with light and matter”
- Physics Colloquium, April 29 2011, Physics Department, University of North Dakota, Grand Forks, North Dakota, USA: “Optical microresonators: Playing with light and matter”
- IEEE Photonics Society Seminar, June 14 2010, Department of Electrical and Computer Engineering, McGill University, Montréal, Québec, Canada: “Whispering gallery modes: Manipulating light and other applications”
- Thin Film Research Laboratory (GCM) seminar, November 16 2009, École Polytechnique Montréal, Montréal, Québec, Canada: “Whispering gallery modes: Manipulating light and other applications”
- Seminar, November 20 2009, Institut National de la Recherche Scientifique (INRS) - Énergie, Matériaux et Télécommunications, Varennes, Montréal, Canada: “Whispering gallery modes: Manipulating light and other applications”

Conference presentations

- Optica Advanced Photonics Congress 2024, July 2024, Quebec City, QC, Canada
Contributed talk: “Systematic study of Flame-Fabricated Surface Nanoscale Axial Photonics resonators” A. Hanna, E. C. V. Eadie, S. Deep, and **P. Bianucci**
- Photonics North 2023, June 2023, Montreal, QC, Canada
Invited talk: “Engineering the dispersion of optical rings with ideas from condensed-matter physics” **P. Bianucci**
- Photonics West 2022 (SPIE LASE), March 2022, San Francisco, USA
Invited talk: “Optical rings as periodic systems” K. McGarvey and **P. Bianucci**
- Frontiers in Optics + Laser Science 2019, September 2019, Washington DC, USA
Contributed poster: “Bloch-Floquet waves in optical ring resonators” K. McGarvey-Lechable and **P. Bianucci**
- ONNA 2019 Workshop on optical nanofibre applications, June 2019, Okinawa, Japan
Invited talk: “Microfibers to create optical confinement and measure it”, **P. Bianucci**
- Photonics North 2019, May 2019, Quebec City, USA
Invited talk: “The art of trapping light in round(ish) objects” **P. Bianucci**
- 2019 March Meeting, American Physical Society, March 2019, Boston, USA
Contributed talk: “A topological nanobeam microcavity” K. McGarvey-Lechable and **P. Bianucci**

- 2019 March Meeting, American Physical Society, March 2019, Boston, USA
Contributed talk: “Localization of light induced by pulling a fiber” T. Hamidfar and **P. Bianucci**
- 2019 March Meeting, American Physical Society, March 2019, Boston, USA
Contributed talk: “Hydrothermal growth of zinc oxide nanorods doped with manganese” R. Bagga, T. Vo-Van, and **P. Bianucci**
- Emerging Technologies (Communications, Microsystems, Optoelectronics, Sensors) 2018, May 2018, Whistler, Canada
Invited talk: “A topological nanobeam microcavity”, K. McGarvey-Lechable and **P. Bianucci**
- 30^{eme} 2017 International Conference on Clean Energy (ICCE), December 2017, Xi’an, China
Invited talk: “Controlling the hydrothermal growth of zinc oxide nanorods” Amir Hassanpour and **P. Bianucci**
- 30^{eme} Entretiens Jacques Cartier “La lumière au nanomonde”, October 2017, Montreal, Canada
Invited talk: “Slow light in dispersion-engineered photonic crystal ring resonators” K. McGarvey-Lechable, T. Hamidfar, D. Patel, L. Xu, D. V. Plant, and **P. Bianucci**
- XXXIInd Union Radio-Scientifique Internationale General Assembly and Scientific Symposium, August 2017, Montreal, Canada
Invited talk: “Slow light in dispersion-engineered photonic crystal ring resonators” K. McGarvey-Lechable, T. Hamidfar, D. Patel, L. Xu, D. V. Plant, and **P. Bianucci**
- Optical Nanofibre Applications: From quantum to bio technologies 2017, June 2017, Okinawa, Japan
Contributed talk: “Flame-based fabrication of solid and hollow surface nanoscale axial photonics microresonators” T. Hamidfar and **P. Bianucci**
- 7th International Conference on Optical, Optoelectronic and Photonic Materials and Applications, June 2016, Montreal, Canada
Contributed talk: “Patterned growth of ZnO nanorods by using low temperature wet chemical method” A. Hassanpour and **P. Bianucci**
- CLEO:QELS - Fundamental Science 2016, June 2016, San Jose, USA
Contributed poster: “Slow Light Enhancement of Q-factors in Fabricated Photonic Crystal Ring Resonators” K. McGarvey-Lechable, T. Hamidfar, D. Patel, L. Xu, David V. Plant, **P. Bianucci**
- Emerging Technologies (Communications, Microsystems, Optoelectronics, Sensors) 2016, May 2016, Montreal, Canada
Invited talk: “Slow light in photonic crystal ring optical microresonators”, K. McGarvey-Lechable and **P. Bianucci**
- 2015 Canadian-American-Mexican Graduate Student Conference, September 2015, Oaxaca, Mexico
Plenary talk: “Tightly squeezing light in small spaces”, **P. Bianucci**
- Photonics North 2015, June 2015, Ottawa, Canada
Invited talk: “Design of slow light photonic crystal ring resonators” K. McGarvey-Lechable and **P. Bianucci**
- CLEO:QELS - Fundamental Science 2015, May 2015, San Jose, USA
Contributed talk: “Nonlinear frequency mixing in a surface nanoscale axial photonics resonator”, M. Kues, C. Reimer, T. Hamidfar*, R. Morandotti, and **P. Bianucci** (*peer reviewed*)
- EMN East 2015, April 2015, Beijing, China
Invited talk: “Patterned growth of zinc oxide nanowires”, A. Hassanpour* and **P. Bianucci**

- Photonics North 2014, May 2014, Montreal, Canada
Contributed talk: “Fabrication and characterization of surface nanoscale axial photonics microresonators”, T. Hamidfar* and **P. Bianucci** (*peer reviewed*)
Contributed poster: “Design of Slow Light Resonant Modes in Photonic Crystal Ring Resonators”, K. McGarvey-Lechable* and **P. Bianucci** (*peer reviewed*)
- ONNA 2013 Workshop on optical nanofibre applications, June 2013, Okinawa, Japan
Contributed talk: “Phage-functionalized microdisk resonators for bacterial sensing”, H. Ghali, T. D. Lazzara, H. Chibli, **P. Bianucci**, J. Nadeau, and Y.-A. Peter
- Canadian Association of Physicists 2013 Congress, May 2013, Montreal, Quebec, Canada
Contributed talk: “Optical whispering gallery microresonators with semiconductor nanostructures”, **P. Bianucci**
- 2012 March Meeting, American Physical Society, March 2012, Boston, Massachusetts, USA
Contributed talk: “An optically pumped InGaAsP/InP quantum dot rolled-up microtube laser”, **P. Bianucci**, M. H. Tavakoli Dastjerdi, S. Mukherjee, M. Djavid, P. J. Poole, and Z. Mi
Contributed poster: “Bacterial sensing using phage-functionalized whispering gallery microcavities”, H. Ghali, H. Chibli, **P. Bianucci**, J. Nadeau, and Y.-A. Peter
- Information Photonics 2011, May 2011, Ottawa, Ontario, Canada
Contributed talk: “Self-Organized Quantum-Dot Semiconductor Microtube Lasers and their Integration on Silicon Photonics Platforms” **P. Bianucci**, Z. Tian, V. Veerasubramanian, A. G. Kirk, D. V. Plant, P. J. Poole, and Z. Mi (*peer reviewed*)
- CLEO Conference 2011, May 2011, Baltimore, Maryland, USA
Contributed Poster: “Optically pumped room temperature InAs/InGaAsP microtube laser operating near 1.55 μm ” **P. Bianucci**, S. Mukherjee, P. Poole, and Z. Mi (*peer reviewed*)
- Innovative Green Fibre Products Network 1st Annual Meeting, February 2011, Montreal, Quebec, Canada
Contributed talk: “Nanoscale infrared sources for spectroscopic analysis of water content in wood fibre networks”, **P. Bianucci**, K. Cui, H. P. T. Nguyen, and Z. Mi
- Photonics West 2011, January 2011, San Francisco, California, USA
Invited talk: “Self-organized InAs quantum dot tube lasers and integrated optoelectronics on Si”, Z. Mi, **P. Bianucci**, S. Mukherjee, F. Li, Z. Tian, V. Veerasubramanian, A. G. Kirk, and D. V. Plant
- 217th Meeting of the Electrochemical Society, April 2010, Vancouver, British Columbia, Canada
Invited talk: “Coupling silicon nanocrystal fluorescence to optical bottle resonators”, **P. Bianucci**, J. G. C. Veinot, and A. Meldrum
- Nano and Giga Challenges in Electronics, Photonics and Renewable Energy 2009, August 2009, Hamilton, Ontario, Canada
Contributed talk: “Si-nanocrystal-coated optical fibers for refractometry of fluids”, **P. Bianucci**, J. R. Rodríguez, C. M. Clements, J. G. C. Veinot, and A. Meldrum (*peer reviewed*)
- March Meeting 2009, American Physical Society, March 2009, Pittsburgh, Pennsylvania, USA
Contributed talk: “Silicon nanocrystal photoluminescence in cylindrical whispering gallery resonators”, **P. Bianucci**, J. R. Rodríguez, C. M. Clements, J. G. C. Veinot, and A. Meldrum

- 3rd International Conference on Optical, Optoelectronic and Photonic Materials and Applications, July 2008, Edmonton, Alberta, Canada
Contributed talk: “Whispering gallery mode photoluminescence in Silicon-nanocrystal coated cylindrical microcavities”, **P. Bianucci**, J. R. Rodríguez, C. M. Hessel, A. Meldrum, and J. G. C. Veinot (*peer reviewed*)
Contributed talk: “Observation of simultaneous fast and slow light in a microresonator”, **P. Bianucci**, C. Fietz, J. W. Robertson, G. Shvets, and C. K. Shih
- March Meeting 2007, American Physical Society, March 2007, Denver, Colorado, USA
Contributed talk: “Polarization conversion in a silica microsphere”, **P. Bianucci**, C. Fietz, J. W. Robertson, G. Shvets, and C. K. Shih
- Harrington Symposium on Solid State Cavity Quantum Electrodynamics, October 2006, The University of Texas at Austin, Austin, Texas, USA.
Presented poster: “Whispering Gallery Modes in silica microspheres: Applications to photonics”, **P. Bianucci**, J. W. Robertson, C. Fietz, G. Shvets and C. K. Shih
- CLEO/IQEC 2006 Conference, May 2006, Long Beach, California, USA.
Contributed talk: “Internal and external polarization memory loss in single quantum dots”, Q. Q. Wang, A. Muller, H. J. Zhou, M. T. Cheng, **P. Bianucci**, and C. K. Shih (*peer reviewed*)
- March Meeting 2006, American Physical Society, March 2006, Baltimore, Maryland, USA.
Contributed talk: “Q spoiling of a fused silica microsphere”, **P. Bianucci**, J. W. Robertson, A. Muller, and C. K. Shih.
Contributed talk: “Internal and external polarization memory loss in single quantum dots”, Q. Q. Wang, A. Muller, H. J. Zhou, M. T. Cheng, **P. Bianucci**, and C. K. Shih
- CLEO/QELS 2005 Conference, May 2005, Baltimore, Maryland, USA
Contributed talk: “Population oscillations of two orthogonal states in a single quantum dot”, Q. Q. Wang, A. Muller, H. J. Zhou, M. T. Cheng, **P. Bianucci**, Q.K. Xue, and C. K. Shih (*peer reviewed*)
- March Meeting 2005, American Physical Society, March 2005, Los Angeles, California, USA
Contributed talk: “Towards the coupling of microsphere resonators and self-assembled semiconductor quantum dots”, **P. Bianucci**, J. W. Robertson, A. Muller, L. N. Prill Sempere, and C. K. Shih
Contributed talk: “Population oscillations of two orthogonal states in a single quantum dot”, Q. Q. Wang, A. Muller, H. J. Zhou, M. T. Cheng, **P. Bianucci**, Q.K. Xue, and C. K. Shih
- Monte Verità Summer School on Semiconductor Quantum Dots, September 2004, Ascona, Switzerland
Contributed poster: “Experimental realization of the Deutsch-Jozsa algorithm in a single quantum dot”, **P. Bianucci**, A. Muller, C. K. Shih, Q. Q. Wang, Q. K. Xue, and C. Piermarocchi.
- CLEO/IQEC 2004 Conference, May 2004, San Francisco, California, USA
Contributed poster: “Single qubit Deutsch-Jozsa algorithm in a quantum dot”, **P. Bianucci**, A. Muller, C. K. Shih, Q. Q. Wang, Q. K. Xue, and C. Piermarocchi. (*peer reviewed*)
- March Meeting 2004, American Physical Society, March 2004, Montreal, Canada
Contributed talk: “Single qubit Deutsch-Jozsa algorithm in a quantum dot”, **P. Bianucci**, A. Muller, C. K. Shih, Q. Q. Wang, Q. K. Xue, and C. Piermarocchi.
- Pan American Advanced Study Institute on: “Physics of Information”, December 2003, Buzios, Rio de Janeiro, Brazil
Presented poster: “Coherent manipulation of the quantum state of excitons in single self-assembled quantum dots”, A. Muller, **P. Bianucci**, Q. Q. Wang, C. K. Shih, C. Piermarocchi, and Q. K. Xue

- March Meeting 2003, American Physical Society, March 2003, Austin, Texas, USA
Contributed talk: “Photon correlation studies in a cross-section geometry”, **P. Bianucci**, A. Muller, Q. Q. Wang and C. K. Shih
- Pan American Advanced Study Institute on: “Chaos, decoherence and quantum entanglement”, October 2000, Ushuaia, Tierra del Fuego, Argentina
Presented poster: “Decoherence in a chaotic quantum map”, **P. Bianucci**, J. P. Paz and M. Saraceno
Presented poster: “Wigner functions for Finite Systems and Phase Space representation of Quantum Computation”, M. Saraceno, J. P. Paz and **P. Bianucci**
- 85th Annual meeting of the Asociación Física Argentina, September 2000, Buenos Aires, Argentina
Contributed poster: “Decoherencia en un mapa cuántico”, **P. Bianucci**, J. P. Paz and M. Saraceno
- 84th Annual meeting of the Asociación Física Argentina, September 1999, San Miguel de Tucumán, Tucumán, Argentina
Contributed poster: “Láser Nd:YAG pulsado con doblado intracavidad”, A. C. Ventura, **P. Bianucci**, A. R. Libertun and M. C. Marconi

Patents

- US Patent 9,452,446: “Method for depositing silicon nanocrystals in hollow fibers”.
Inventors: J. G. C. Veinot, J. R. Rodríguez, A. Meldrum and **P. Bianucci**
Status: Granted

Teaching experience

- Assistant Professor**, Department of Physics, Concordia University, Fall 2012-Present
- Analytical Mechanics (PHYS 245)
 - Quantum Mechanics (PHYS 377)
 - Method of Theoretical Physics II (PHYS 335)
- Assistant Instructor**, Department of Physics, The University of Texas at Austin, Fall 2006
- Introduction to the Physical Sciences: Mechanics and Heat (PS 303).
- Teaching Assistant**, Department of Physics, The University of Texas at Austin, Fall 2003, 2001-2002
- Laboratory for General Physics II: Optics and electricity for biomedical applications (PHY 117N).
- Teaching Assistant**, Departamento de Física “J. J. Giambiaggi”, Universidad de Buenos Aires, 1999–Spring 2001
- *Optics and Waves for physics students,*
 - Taught: *Optics and Electricity for Biology and Geology students,*
Optics and Thermodynamics for Chemistry students.
 - Partially prepared and graded midterms.
 - Prepared lectures and gave one-on-one consultations.

Teaching skills development

- “Getting started with blended learning”, CTLS workshop, February 2014

Editorial positions

- Associate Editor, Optics Express (OSA) 2019–

Academic activities

- Organizing chair for the *Nonlinear optics, nanophotonics, and plasmonics* session at Photonics North 2021 June 2021
- Session chair at Photonics North 2019 May 2019
- Session chair at Photonics North 2019 May 2019
- Session chair at Photonics North 2015 June 2015
- Selection committee member for FRQNT M.Sc. scholarships 2015
- External reviewer for the NSERC Discovery program 2014
- External reviewer for the NSERC Idea-to-Innovation program 2014
- Member of the organizing committee of the “Non-linear optics, nanophotonics, and quantum optics” session at Photonics North 2014 May 2014
- Organizer and chair of an Invited Symposium at the American Physical Society 2012 March Meeting. March 2012
- Reviewer for:
 - Physical Review (A, B & Letters)
 - Optics Letters, Optics Express and Applied Optics
 - Applied Physics Letters and the Journal of Applied Physics
 - Advanced Materials
 - Journal of the American Chemical Society
 - Solid State Communications
 - *physica status solidi*
 - Journal of Optical Communications and Networking
 - Nature Scientific Reports
 - Journal of Physical Chemistry C
 - The Journal of Physical Chemistry Letters
 - IEEE Photonics Technology Letters
 - International Journal of Theoretical Physics
 - Journal of Nanomaterials
- Assistant organizer for the “Harrington Symposium on Solid State Cavity Quantum Electrodynamics”, The University of Texas at Austin October 2006

Professional memberships

- Optica (former Optical Society of America) 2006–
- American Physical Society 2003–
- American Association of Physics Teachers 2000–
- Asociación Física Argentina 1999–

Outreach

- Presenter, “Diffraction of light”, to a preschool class (about 20 kids aged 5-6 years), École primaire Marc-Favreau, Montréal, February 2015.
- 53rd International Math Olympiad (2012): Exam Taking Committee member and organization of the Problem Coordination.

Other skills

- Computer programming (C, Python, basic Perl)
- Intermediate UNIX system administration (GNU/Linux)

Languages

- English (fluent)
- French (intermediate)
- Spanish (native speaker)