Igor Brandão | M.Sc.

05/12/1996 - Brazil

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Education

Yale **United States**
Ph.D. Student – Physics *June 2022 - PRESENT*
Advisor: Prof. Dr. Jack Harris

Pontifical Catholic University of Rio de Janeiro **Brazil**
Masters in Physics - Optics *March 2019 - April 2021*
Advisor: Prof. Dr. Thiago Guerreiro GPA: 9.4/10
Note: Honours scholarship 'Bolsa Nota 10' for outstanding academic performance

Pontifical Catholic University of Rio de Janeiro **Brazil**
Bachelor's degree in Physics with minor in Mathematics *August 2014 - January 2019*
Note: Full tuition scholarship GPA: 7.5/10

Scholarships & Awards

Yale's full-time Ph.D. tuition scholarship & stipend		*15/08/2022 - PRESENT*
Yale Physics Early Start program stipend		*13/06/2022 - 15/08/2022*
FAPERJ Bolsa Nota 10 Masters Scholarship	**No. E-26/200.270/2020**	*01/04/2020 - 01/03/2021*
CNPq Institutional Masters Scholarship	**No. 131945/2019-0**	*01/03/2019 - 31/03/2020*
FAPERJ Undergraduate Research Scholarship	**No. E-26/200.685/2016**	*01/05/2016 - 30/04/2018*

Research interests

Quantum Optomechanics, Quantum Thermodynamics, Quantum Information

Publications

1. **I. Brandão**, Tandeitnik, D. & Guerreiro, T. QuGIT: A numerical toolbox for Gaussian quantum states. *Computer Physics Communications* **280,** 108471 (Nov. 2022).
2. **I. Brandão**, Tandeitnik, D. & Guerreiro, T. Coherent scattering-mediated correlations between levitated nanospheres. *Quantum Science and Technology* **6,** 045013 (Sept. 2021).
3. **I. Brandão**, Suassuna, B., Melo, B. & Guerreiro, T. Entanglement dynamics in dispersive optomechanics: Nonclassicality and revival. *Phys. Rev. Research* **2,** 043421 (Dec. 2020).
4. Melo, B., **I. Brandão**, Pinheiro, B. S., Rodrigues, R. B., Khoury, A. Z. & Guerreiro, T. Optical Trapping in a Dark Focus. *Phys. Rev. Applied* **14,** 034069 (Sept. 2020).
5. Melo, B., **I. Brandão**, Tomei, C. & Guerreiro, T. Directed graphs and interferometry. *J. Opt. Soc. Am. B* **37,** 2199–2208 (July 2020).

Research Visits

Institute for Quantum Optics and Quantum Information (Austria) *20/01/2022 - 25/01/2022*
Guest researcher at Romero-Isart group

Seminars

Probing nonclassical correlations between indirectly coupled optomechanical systems *20/01/2022*
Romero-Isart group - Institute for Quantum Optics and Quantum Information, Innsbruck (Austria)

Coherent scattering-mediated correlations between levitated nanospheres *11/10/2021*
Quantum Measurement Lab - Imperial College London (online)

Optomechanics: Using Light to Control Matter *25/05/2021*
Selected for post-graduate week - PUC-Rio (online)

Languages

Portuguese (native) and English (fluent)

Programming

Quantum Gaussian Information Toolbox *January 2021*
Numerical toolbox for Gaussian Quantum Information and gaussian preserving open quantum dynamics (Python)
https://github.com/IgorBrandao42/Quantum-Gaussian-Information-Toolbox

MicroSphere Tracker *October 2019*
Real time multi-object detection and tracking using Computer Vision (MATLAB)
https://github.com/IgorBrandao42/MicroSphere-Tracking

Microswimmer Brownian Motion *June 2021*
Numerical simulation of 2D active brownian motion, self-propelled particles, with collision with obstacles (MATLAB)
https://github.com/IgorBrandao42/active-brownian-motion-reflective-boundaries

Programming languages & tools: C++, CUDA, Python, JavaScript, MATLAB, QuTip

Experience

Pontifical Catholic University of Rio de Janeiro **Brazil**
Research Assistant *March 2021 - April 2022*
Advisor: Prof. Dr. Thiago Guerreiro

IMPA's Fluid Dynamics Laboratory
Software Developer *December 2019 - February 2020*
Development of a MATLAB application for solutions for Riemann Problems

IMPA's Fluid Dynamics Laboratory
Undergraduate researcher *August 2014 - June 2018*
Development and implementation of numerical methods in C++ and CUDA C

References

Prof. Dr. Jack Harris (Yale): jack.harris@yale.edu

Prof. Dr. Thiago Guerreiro (PUC-Rio): barbosa@puc-rio.br

Prof. Dr. Dan Marchesin (IMPA): marchesi@impa.br