Igor Brandão | M.Sc.

05/12/1996 - Brazil

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Rua Marquês de São Vicente 225, Department of Physics — Rio de Janeiro, Brazil

Education

Pontifical Catholic University of Rio de Janeiro **Brazil**
Masters in Physics - Optics *March 2019 - April 2021*
Dissertation: Harnessing optomechanical interactions: from trapping organisms to entangling nanospheres
Advisor: Prof. Dr. Thiago Guerreiro GPA: 9.4/10

Pontifical Catholic University of Rio de Janeiro **Brazil**
Bachelor Degree in Physics with minor in Mathematics *August 2014 - December 2018*
Note: Full tuition scholarship GPA: 7.5/10

Scholarships & Awards

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*
CNPq ITI-A Scholarship	**No. 183759/2015-0**	*01/09/2014 - 30/04/2016*

Research interests

Quantum Optomechanics, Quantum Thermodynamics, Quantum Information

Publications

I. Brandão, D. Tandeitnik, and T. Guerreiro. Coherent scattering-mediated correlations between levitated nanospheres, Feb 2021. arXiv:2102.08969.

I. Brandão, B. Suassuna, B. Melo, and T. Guerreiro. Entanglement dynamics in dispersive optomechanics: Nonclassicality and revival. *Phys. Rev. Research*, 2:043421, Dec 2020.

B. Melo, **I. Brandão**, B. Silva Pinheiro da, R. B. Rodrigues, A. Z. Khoury, and T. Guerreiro. Optical trapping in a dark focus. *Phys. Rev. Applied*, 14:034069, Sep 2020.

B. Melo, **I. Brandão**, C. Tomei, and T. Guerreiro. Directed graphs and interferometry. *J. Opt. Soc. Am. B*, 37(7):2199–2208, Jul 2020.

Experience

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

Languages

Portuguese (native) and English (fluent)

Programming

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

MicroSphere Tracker *October 2019*
Real time multi-object detection and tracking using Computer Vision
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
https://github.com/IgorBrandao42/active-brownian-motion-reflective-boundaries

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

References

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

Prof. Dr. Carlos Tomei (PUC-Rio): tomei@mat.puc-rio.br

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