

Philip Caesar M. Flores, Ph.D.

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🌐 <https://pmflores2.github.io/>



Experience

- 2023 – present **Postdoctoral Fellow.** Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany
- 2022 – 2023 **Teaching Fellow.** National Institute of Physics, University of the Philippines Diliman
- 2019 – 2019 **Science Research Specialist.** National Institute of Physics, University of the Philippines Diliman
- 2017 – 2019 **Instructor.** National Institute of Physics, University of the Philippines Diliman

Education

- 2019 – 2023 **Ph.D. in Physics, University of the Philippines Diliman** Supervisor: Eric A. Galapon. Thesis: *Theory of quantized relativistic time-of-arrival operators for spin-0 particles and its application in the quantum tunneling time problem.*
- 2017 – 2019 **M.Sc. in Physics, University of the Philippines Diliman** Supervisor: Eric A. Galapon. Thesis: *Weak equivalence principle in the quantum regime: Compatibility with quantum mechanics, and tunneling effects via the different quantizations of the time of arrival operator.*
- 2012 – 2017 **B.Sc. in Physics, University of the Philippines Diliman** Supervisor: Eric A. Galapon. Thesis: *Synchronization of quantum and classical clocks, and energy translation using resolvent functional calculus for the confined time of arrival operators.*

Service to the Community

- Referee **EPJP, PRA, Sci. Rep., Proceedings of the Physics Society of the Philippines**
- Mentorship **Volunteer mentor at GradMAP Philippines: STEM Mentorship Network**
- Science Communication **Liknayan Podcast: Usapang Physics with Pinoy Physicists**

Awards and Grants

- 2023 **Most Outstanding PhD in Physics Graduate, UP Diliman**
- 2022 **Student Research Support Fund (SRSF) - Research Dissemination Grant, Department of Science and Technology**
- 2018, 2019, 2022 **Office of the Vice President for Academic Affairs (OVPA) Research Dissemination Grant, UP Diliman**
- 2019 **Office of International Linkages (OIL) Travel Grant, UP Diliman**
- 2017 **Leticia Shahani Award for Best Undergraduate Thesis in Physics, UP Diliman**
- 2016 **Diliman BPI-DOST Science Award, UP Diliman**

Research Publications

Preprints

- 1 P. C. M. Flores, S. Carlström, S. Patchkovskii, *et al.*, *Enantiosensitive locking of photoelectron spin and cation orientation*, 2025. [URL: https://arxiv.org/abs/2505.22433](https://arxiv.org/abs/2505.22433).

Journal Articles

- 1 **P. C. Flores**, D. A. Pablico, and E. Galapon, "Instantaneous tunneling time within the theory of time-of-arrival operators," *Physical Review A*, vol. 110, no. 6, p. 062 223, 2024. [DOI](https://doi.org/10.1103/PhysRevA.110.062223): <https://doi.org/10.1103/PhysRevA.110.062223>.
- 2 **P. C. Flores**, D. A. Pablico, and E. Galapon, "Partial- and full-tunneling processes across potential barriers," *Europhysics Letters*, vol. 145, no. 6, p. 65 002, 2024. [DOI](https://doi.org/10.1209/0295-5075/ad2e7a): 10.1209/0295-5075/ad2e7a.
- 3 **P. C. Flores** and E. A. Galapon, "Instantaneous tunneling of relativistic massive spin-0 particles," *Europhysics Letters*, vol. 141, no. 1, p. 10 001, 2023. [DOI](https://doi.org/10.1209/0295-5075/acad9a): 10.1209/0295-5075/acad9a.
- 4 **P. C. Flores** and E. A. Galapon, "Quantized relativistic time-of-arrival operators for spin-0 particles and the quantum tunneling time problem," *The European Physical Journal Plus*, vol. 138, no. 5, p. 375, 2023, ISSN: 2190-5444. [DOI](https://doi.org/10.1140/epjp/s13360-023-03952-z): 10.1140/epjp/s13360-023-03952-z.
- 5 **P. C. Flores** and E. A. Galapon, "Relativistic free-motion time-of-arrival operator for massive spin-0 particles with positive energy," *Phys. Rev. A*, vol. 105, p. 062 208, 6 2022. [DOI](https://doi.org/10.1103/PhysRevA.105.062208): 10.1103/PhysRevA.105.062208.
- 6 **P. C. Flores** and E. A. Galapon, "Quantum free-fall motion and quantum violation of the weak equivalence principle," *Phys. Rev. A*, vol. 99, p. 042 113, 4 2019. [DOI](https://doi.org/10.1103/PhysRevA.99.042113): 10.1103/PhysRevA.99.042113.
- 7 **P. C. Flores**, R. C. F. Caballar, and E. A. Galapon, "Synchronizing quantum and classical clocks made of quantum particles," *Phys. Rev. A*, vol. 94, p. 032 123, 3 2016. [DOI](https://doi.org/10.1103/PhysRevA.94.032123): 10.1103/PhysRevA.94.032123.

Conference Proceedings

- 1 **P. C. Flores** and E. Galapon, "Covariance property of the confined time of arrival operators," in *Proceedings of the Samahang Pisika ng Pilipinas*, 2017. [URL](https://proceedings.spp-online.org/article/view/235): <https://proceedings.spp-online.org/article/view/235>.
- 2 **P. C. Flores** and E. Galapon, "Violation of the weak equivalence principle via the born-jordan quantized toa operator," in *Proceedings of the Samahang Pisika ng Pilipinas*, 2017. [URL](https://proceedings.spp-online.org/article/view/SPP-2019-2G-05): <https://proceedings.spp-online.org/article/view/SPP-2019-2G-05>.
- 3 **P. C. Flores** and E. Galapon, "Violation of the weak equivalence principle via the time of arrival operator," in *Proceedings of the Samahang Pisika ng Pilipinas*, 2017. [URL](https://proceedings.spp-online.org/article/view/SPP-2018-1D-04): <https://proceedings.spp-online.org/article/view/SPP-2018-1D-04>.
- 4 **P. C. Flores** and E. Galapon, "Synchronizing quantum and classical clocks made of quantum particles up to \hbar^2 ," in *Proceedings of the Samahang Pisika ng Pilipinas*, 2016. [URL](https://proceedings.spp-online.org/article/view/309): <https://proceedings.spp-online.org/article/view/309>.
- 5 **P. C. Flores** and E. Galapon, "The resolvent operators of the confined time of arrival operators," in *Proceedings of the Samahang Pisika ng Pilipinas*, 2015. [URL](https://proceedings.spp-online.org/article/view/1157): <https://proceedings.spp-online.org/article/view/1157>.

Conferences and Workshops

- Poster, **Conference on Extreme Light and Chiral Molecular Systems**, Sept 2 - 5 2025, Kassel, Germany
- Poster, **34th International Conference on Photonic, Electronic and Atomic Collisions**, Jul 29 - Aug 5 2025, Sapporo, Japan
- Poster, **10th International Conference on Attosecond Science and Technology**, Jul 6 - 11 2025, Lund, Sweden

Conferences and Workshops (continued)

- Poster, **15th European Conference on Atoms Molecules and Photons**, Jun 30 - Jul 4 2025, Congress Innsbruck, Austria
- Poster, **16th Femtochemistry Conference**, Jun 22 - 27 2025, Savoia Hotel, Trieste, Italy
- Talk, **LIGHT-MATTER INTERACTION: Focusing on Polariton Chemistry and Physics**, May 26 - 30 2025, Cultural Centre “Jules Pascin” - the Synagogue, Bulgaria
- Talk, **DPG Spring Meeting of the Matter and Cosmos Section**, Mar 31 - Apr 4 2025, University of Goettingen, Germany
- Talk, **DPG Spring Meeting of the Atomic, Molecular, Quantum Optics and Photonics Section**, Mar 9-14 2025, University of Bonn, Germany
- Talk, **Time in Quantum Theory**, Sept 10-13 2024, Smolenice Castle, Slovakia
- Poster, **23rd International Conference on Ultrafast Phenomena**, July 15-19 2024, World Trade Center, Barcelona, Spain
- Participant, **COST/ZCAM School on New Computational Methods for Attosecond Molecular Processes**, May 27-31 2024, Universidad de Zaragoza, Spain
- Poster, **10th ASTHRDP Graduate Scholars' Conference**, Sept 22 - 23 2022, UP Diliman, Philippines
- Poster, **Time in Quantum Theory**, Sept 19 - 23 2022, Technical University of Vienna, Austria
- Participant, **Quantizing Time**, June 14-18, 2021, Perimeter Institute (Virtual Meeting)
- Participant, **7th Les Houches School in Computational Physics: Dynamics of Complex Quantum Systems, from Theory to Computation**, Apr 12-23 2021, Les Houches Physics School (Virtual Meeting)
- Participant, **Conference on Time Crystals**, Mar 8-10 2021, ICTP (Virtual Meeting)
- Poster, **ICTP Asian Network School and Workshop on Complex Condensed Matter Systems**, Nov 4-8 2019, UP Diliman, Philippines
- Poster, **2nd Annual Graduate Students Research Conference**, 2019, UP Diliman, Philippines
- Talk, **37th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting**, May 29 - Jun 1 2019, Tagbilaran, Bohol, Philippines
- Poster, **Time and fundamentals of quantum mechanics**, Jan 28 - 31 2019, The David Lopatie Conference Centre, Weizmann Institute of Science, Israel
- Talk, **36th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting**, Jun 6 - 9 2018, Puerto Princesa, Palawan, Philippines
- Talk, **35th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting**, Jun 7 - 10 2017, Cebu, Philippines
- Talk, **8th Jagna International Workshop: Structure, Functions and Dynamics from nm to Gm** , Jan 4 - 7 2017, Jagna, Bohol, Philippines
- Talk, **34th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting**, Aug 18 - 21 2016, UP Visayas, Philippines
- Participant, **CERN School Philippines**, Mar 31 - Apr 8 2015, UP Diliman, Philippines

Skills

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|-----------|---|
| Languages | ■ English, Filipino |
| Coding | ■ Python, Mathematica, Matlab, \LaTeX |
| Misc. | ■ Academic research, teaching, training, consultation, \LaTeX typesetting and publishing. |

Teaching

Lecturer	■	Classical Mechanics, Optics and Electricity and Magnetism, Thermodynamics, Special Relativity, and Quantum Mechanics, and Modern Physics
Lab	■	Classical Mechanics, Optics Electricity and Magnetism, and Thermodynamics, Special Relativity, and Quantum Mechanics
Grader	■	Mathematical Physics, Statistical Physics, and Quantum Mechanics

Miscellaneous Experience

Volunteer Work

2017-2018	■	Lecturer, College Entrance Exam Review. Project by the Office of Cong. Miro Quimbo in partnership with the UP Alpha Sigma Fraternity. Held at Concepcion Integrated School
2016-2017	■	Lecturer, Kapihan sa Diliman. An initiative of the UPD University Student Council, together with the UPD Office of the Vice Chancellor for Student Affairs, and Diliman Learning Resource Center. The project aims to provide a study space for students with various free services such as free wifi, free coffee, free printing, free snacks, and free tutorials.
2015-2017	■	Toy 4 Totoy. Outreach program organized by the UP Alpha Sigma Fraternity to provide entertainment, organize games, coordinate gift-giving, and host a luncheon for underprivileged communities, fostering a festive and joyful atmosphere during the Christmas season.
2015	■	Medical Mission. Outreach program organized by the UP Alpha Sigma Fraternity aimed at supplying essential medical resources to underprivileged communities.

Admin

2017-2019	■	Faculty Adviser. <i>Alpha Sigma Fraternity, UP Diliman</i>
2017-2018	■	Socials Committee. <i>National Institute of Physics Junior Faculty, UP Diliman</i>
2016-2017	■	Political Committee Head. <i>Alpha Sigma Fraternity, UP Diliman</i>
2015-2017	■	Master of Finance. <i>Alpha Sigma Fraternity, UP Diliman</i>

References

Prof. Dr. Olga Smirnova

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