Philip Caesar **Flores**

Physicist · Researcher

Max-Born-Institute, Berlin, Germany

flores@mbi-berlin.de | philcsar2.github.io | googlescholar-id

"Study hard what interests you the most in the most undisciplined, irreverent and original manner possible."- Richard Feynmann

Experience

Postdoctoral Researcher

Berlin

Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy — *Mar. 2023 - present*

- Supervisor: Prof. Dr. Olga Smirnova
- Develop geometric concepts in the photoionization of chiral molecules

Teaching Fellow

Quezon City

National Institute of Physics, University of the Philippines Diliman — *Sept. 2022 - Jan. 2023*

- Scholarship offered by UP to PhD students in order to reduce the teaching load of the faculty members
- Responsibilities include assisting faculty members in teaching classes

Science Research Specialist

Quezon City

National Institute of Physics, University of the Philippines Diliman — *Aug. 2019 - Dec. 2019*

- Project: Standards and Testing Automated Modular Platform (Stamp)
- Principal Investigator: Giovanni Tapang, Ph.D.
- Develop a cheap alternative for existing ISO methodologies implemented in Regional Standards and Testing Laboratories (RSTLs).

Instructor

Quezon City

National Institute of Physics, University of the Philippines Diliman — *Aug. 2017 - Jul. 2019*

- Taught recitation classes on Classical Mechanics (Physics 71), Optics and Electricity and Magnetism (Physics 72), Thermodynamics, Special Relativity, and Quantum Mechanics (Physics 73), and Modern Physics (Physics 104).
- Taught laboratory classes on Classical Mechanics (Physics 71.1), Optics Electricity and Magnetism (Physics 72.1), and Thermodynamics, Special Relativity, and Quantum Mechanics (Physics 73.1).
- Checked problem sets for Mathematical Physics (Physics 112), Statistical Physics (Physics 151 and 152), and Quantum Mechanics (Physics 241 and 242).

Education

Ph.D. in Physics - Supervisor: Eric A. Galapon, Ph.D.

Quezon City

University of the Philippines Diliman — *Aug. 2019 - Jan. 2023*

- Dissertation title: Theory of quantized relativistic time-of-arrival operators for spin-0 particles and its application in the quantum tunneling time problem

M.Sc. in Physics - Supervisor: Eric A. Galapon, Ph.D.

Quezon City

University of the Philippines Diliman — *Aug. 2017 - Jun. 2019*

- Thesis title: Weak equivalence principle in the quantum regime: Compatibility with quantum mechanics, and tunneling effects via the different quantizations of the time of arrival operator

B.S. in Physics - Supervisor: Eric A. Galapon, Ph.D.

Quezon City

University of the Philippines Diliman — *Jun. 2012 - Jun. 2017*

- Thesis title: Synchronization of quantum and classical clocks, and energy translation using resolvent functional calculus for the confined time of arrival operators

High School Diploma

Iloilo City

Philippine Science High School - Western Visayas Campus — *Jun. 2008 - Mar. 2012*

- Graduated with High Honours
- Participated in provincial and national competitions to represent the school

Research

Preprint

2022 **Instantaneous and non-zero tunneling time regimes,** PCM Flores, DAL Pablico, and EA Galapon, arXiv:2305.09260 — *arXiv*

Publications

2023	**Quantized relativistic time-of-arrival operators for spin-0 particles and the quantum tunneling time problem**, PCM Flores, and EA Galapon, The European Physical Journal Plus, 138, 375	*EPJP*
2023	**Instantaneous tunneling of relativistic massive spin-0 particles**, PCM Flores, and EA Galapon, Europhysics Letters, 141(1), 10001	*EPL*
2022	**Relativistic free-motion time-of-arrival operator for massive spin-0 particles with positive energy**, PCM Flores and EA Galapon, Physical Review A 99, 042113 (2022).	*PRA*
2019	**Quantum free-fall motion and quantum violation of the weak equivalence principle**, PCM Flores and EA Galapon, Physical Review A 99, 042113 (2019).	*PRA*
2016	**Synchronizing quantum and classical clocks made of quantum particles**, PCM Flores, RCF Caballar, and EA Galapon, Physical Review A 94, 032123 (2016).	*PRA*

Conference Proceedings

2019	**Violation of the weak equivalence principle via the Born-Jordan quantized TOA operator**, PCM Flores and EA Galapon, Proceedings of the Samahang Pisika ng Pilipinas	*Tagbilaran City*
2018	**Violation of the weak equivalence principle via the time of arrival operator**, PCM Flores and EA Galapon, Proceedings of the Samahang Pisika ng Pilipinas	*Puerto Prinsesa City*
2017	**Covariance property of the confined time of arrival operators**, PCM Flores and EA Galapon, Proceedings of the Samahang Pisika ng Pilipinas	*Cebu City*
2016	**Synchronizing quantum and classical clocks made of quantum particls up to $\hbar^2$**, PCM Flores, RCF Caballar, and EA Galapon, Proceedings of the Samahang Pisika ng Pilipinas	*Iloilo City*
2015	**The resolvent operators of the confined time of arrival operators**, PCM Flores, RCF Caballar, and EA Galapon, Proceedings of the Samahang Pisika ng Pilipinas	*Vigan City*

Referee requests

The European Physical Journal Plus D, Scientific Reports, Proceedings of the Samahang Pisika ng Pilipinas (Physics Society of the Philippines),

Conferences & Workshops

2023	**Participant**, The Global Young Scientist Summit (Jan 17 - 20)	*Singapore*
2022	**Poster Presentation**, 10th ASTHRDP Graduate Scholars' Conference (Sept 22 - 23)	*Philippines*
2022	**Participant**, Time in Quantum Theory (Sept 19 - 23)	*Austria*
2021	**Participant**, Quantizing Time, Perimeter Institute (Virtual Meeting)	*Canada*
2021	**Participant**, 7th Les Houches School in Computational Physics: Dynamics of Complex Quantum Systems, from Theory to Computation (Virtual meeting)	*France*
2021	**Participant**, Conference on Time Crystals (An ICTP virtual meeting)	*Italy*
2019	**Poster presentation**, ICTP Asian Network School and Workshop on Complex Condensed Matter Systems, National Institute of Physics, UP Diliman	*Philippines*
2019	**Poster presentation**, 2nd Annual Graduate Students Research Conference, College of Science Administration Building Auditorium, UP Diliman	*Philippines*
2019	**Oral presentation**, 37th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting, Tagbilaran, Bohol	*Philippines*
2019	**Poster presentation**, Time and fundamentals of quantum mechanics, The David Lopatie Conference Centre, Weizmann Institute of Science	*Israel*
2018	**Oral presentation**, 36th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting, Puerto Princesa, Palawan	*Philippines*
2017	**Oral presentation**, 35th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting, Cebu City, Cebu	*Philippines*
2017	**Oral presentation**, 8th Jagna International Workshop: Structure, Functions and Dynamics from nm to Gm, Jagna, Bohol	*Philippines*
2016	**Oral presentation**, 34th Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting, Iloilo City, Iloilo	*Philippines*
2015	**Oral presentation**, 33rd Samahang Pisika ng Pilipinas International Physics Conference and Annual Meeting, Vigan, Ilocos Sur	*Philippines*
2014	**Participant**, CERN School Philippines, National Institute of Physics, UP Diliman	*Philippines*

Awards and Grants

2023	**Most Outstanding PhD in Physics Graduate**, Awarded by the National Institute of Physics, UP Diliman during the Recognition Rites for Class 2023	*UP Diliman*
2023, 2022, 2019,2016	**International Publication Award**, Awarded by the University of the Philippines to faculty and students who were able to publish papers in ISI journals	*UP Diliman*
2022, 2019, 2018	**Office of the Vice President for Academic Affaircs (OVPAA) Research Dissemination Grant**, Awarded to outstanding faculty and REPS researchers who receive invitations or gain acceptance to present their research papers in prestigious international conferences.	*Philippines*
2022	**Student Research Support Fund (SRSF) - Research Dissemination Grant**, Support for DOST scholars accepted for oral/poster presentation in a local or international conference	*South Korea & Austria*
2019	**Office of International Linkages (OIL) Travel Grant**, Support for researchers and graduate students for paper presentation at international conferences	*Israel*
2017	**Leticia Shahani Award for Best Undergraduate Thesis in Physics**, College of Science Graduation	*UP Diliman*
2016	**Diliman BPI-DOST Science Award**, Awardees are selected on the basis of their academic and research performance and nomination from the school	*UP Diliman*
2012-2016	**University Scholar**, Awarded by the University of the Philippines to students who were able to garner a GWA higher than 1.25 for the semester, 1st Sem A.Y. 15-16, 1st Sem A.Y. 12-13	*UP Diliman*
	College Scholar, Awarded by the University of the Philippines to students who were able to garner a GWA higher than 1.75 but lower than 1.25 for the semester, 2nd Sem A.Y. 14-15, 2nd Sem A.Y. 12-13	*UP Diliman*

Affiliations

2023-present	**Strong-Field Theory Group**, Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy	*Berlin, Germany*
2018-present	**Samahang Pisika ng Pilipinas**, Professional organization of physicists and physics educators in the Philippines.	*UP Diliman*
2015-present	**UP Alpha Sigma Fraternity**, The UP Alpha Sigma Fraternity is the first Philippine progressive fraternity that was established to form a unique vision that aimed at principled brotherhood, fused with the scholarly pursuit of truth-reason-justice.	*UP Diliman*
2014-present	**Theoretical Physics Group**, Members of the group perform research in mathematical physics, computational physics, statistical mechanics, quantum mechanics, nonlinear problems, gravitational physics, and relativistic astrophysics.	*UP Diliman*

References

Eric A. Galapon, PhD

Professor

- Thesis Adviser, Theoretical Physics Group, National Institute of Physics, University of the Philippines Diliman
- eric.galapon@up.edu.ph

Michael Francis Ian Vega II, PhD

Professor

- Program Coordinator, Theoretical Physics Group, National Institute of Physics, University of the Philippines Diliman
- ivega@nip.upd.edu.ph

Giovanni A. Tapang, PhD

Professor

- Dean, College of Science, University of the Philippines Diliman
- gtapang@nip.upd.edu.ph