

Philip Caesar Flores

PHYSICIST · RESEARCHER

Max-Born-Institute, Berlin, Germany

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

Experience

Postdoctoral Researcher

MAX BORN INSTITUTE FOR NONLINEAR OPTICS AND SHORT PULSE SPECTROSCOPY

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

Berlin

Mar. 2023 - present

Teaching Fellow

NATIONAL INSTITUTE OF PHYSICS, UNIVERSITY OF THE PHILIPPINES DILIMAN

- 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

Quezon City

Sept. 2022 - Jan. 2023

Science Research Specialist

NATIONAL INSTITUTE OF PHYSICS, UNIVERSITY OF THE PHILIPPINES DILIMAN

- 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).

Quezon City

Aug. 2019 - Dec. 2019

Instructor

NATIONAL INSTITUTE OF PHYSICS, UNIVERSITY OF THE PHILIPPINES DILIMAN

- 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).

Quezon City

Aug. 2017 - Jul. 2019

Education

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

UNIVERSITY OF THE PHILIPPINES DILIMAN

- Dissertation title: Theory of quantized relativistic time-of-arrival operators for spin-0 particles and its application in the quantum tunneling time problem
- Constructed a formalism on the construction of relativistic time-of-arrival operators and showed that the tunneling time for a square barrier is instantaneous provided that the barrier heights is less than the rest mass energy.

Quezon City

Aug. 2019 - Jan. 2023

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

UNIVERSITY OF THE PHILIPPINES DILIMAN

- 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
- Studied the quantum violation of the weak equivalence principle for a structureless particle fired upward. This was done by quantizing the classical expression of the classical time of arrival using various quantization schemes, as well as supraquantization, to construct a time of arrival operator. The violation of the weak equivalence principle was demonstrated by showing mass-dependent quantum correction terms to the classical time of arrival as well as mass dependence on the time of arrival distribution.

Quezon City

Aug. 2017 - Jun. 2019

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

UNIVERSITY OF THE PHILIPPINES DILIMAN

- Thesis title: Synchronization of quantum and classical clocks, and energy translation using resolvent functional calculus for the confined time of arrival operators
- The thesis aimed to study some physical and mathematical aspects of the time of arrival operator. The first half deals with eliminating the effects of quantum correction terms up to an arbitrary order for the classical time of arrival of a free particle. By doing so, we are able to synchronize a classical and quantum clock that uses the time of arrival of the free particle as time interval markers. The second half deals with the energy translation properties of the confined time of arrival operators.

Quezon City

Jun. 2012 - Jun. 2017

High School Diploma

PHILIPPINE SCIENCE HIGH SCHOOL - WESTERN VISAYAS CAMPUS

Iloilo City

Jun. 2008 - Mar. 2012

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

Awards and Grants

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 Affairs (OVPA) 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

Research

PREPRINT

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

Scientific Reports,
The European Physical Journal Plus D,
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

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