

# Rommil B. Emperado

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## PERSONAL INFORMATION

Full Name: Emperado, Rommil, Bacurin  
Gender: Male  
Civil Status: Married  
Nationality: Filipino  
Birthdate: 1995 April 29 (29 years old)  
Present Address: U1701, 101 Xavierville, Bgy. Loyola Heights, Quezon City, Philippines, 1108

## EDUCATIONAL BACKGROUND

2016–06 to 2025–07 University of the Philippines Diliman Doctorate  
2011–06 to 2016–06 University of the Philippines Diliman Bachelor (*Cum Laude*)

## DEGREES ATTAINED

2025–07 Doctor of Philosophy in Physics  
University of the Philippines Diliman, Quezon City, Philippines  
2019–06 Master of Science in Physics (via Straight PhD Physics program)  
University of the Philippines Diliman, Quezon City, Philippines  
2016–06 Bachelor of Science in Physics  
University of the Philippines Diliman, Quezon City, Philippines

## EMPLOYMENT HISTORY

2024–08 to 2025–06 **Teaching Fellow** (UP Teaching Assistantship Program)  
*National Institute of Physics, College of Science, University of the Philippines Diliman, Quezon City, Philippines*  
Teaches classical mechanics (Physics 71: Elementary Physics I) and electrodynamics (Physics 72: Elementary Physics II) service courses to undergraduate students of the University  
Facilitates undergraduate-level experiments in classical mechanics (Physics 71.1), electromagnetism (Physics 72.1), and experimental physics for NIP undergraduate students (Physics 191 & 192).

2016–06 to 2024–07 **Instructor** (Instructor 3, 2016–2019; Instructor 7, 2019–2024)  
*National Institute of Physics, College of Science, University of the Philippines Diliman, Quezon City, Philippines*  
Delivered lectures and facilitated discussion activities and assessments for NIP service courses (Physics 71, 72)  
Handled laboratory courses in classical mechanics, electromagnetism, and thermodynamics/quantum physics (Physics 71.1, 72.1, 73.1)

Served as the course group leader of Physics 73.1  
 Developed formative and summative assessment tools for Physics 71 and 72  
 Assisted in developing the OBE-based\* syllabus and curriculum for existing and proposed service courses.

\*OBE: outcome-based education

## OTHER ACTIVITIES

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|--------------------|--|
| 2013–06 to present | <b>Student member</b><br><i>Photonics Research Laboratory, National Institute of Physics, UP Diliman</i><br>Trains apprentices and new members of the research laboratory<br>Helps maintain the inventory and facilities of the laboratory<br>Assisted in setting up the high-performance computing system of our research cluster |
| 2016–08 to present | <b>Associate Member and Reviewer</b><br><i>Samahang Pisika ng Pilipinas</i><br>Participates in the peer-review process of full-papers submitted to the proceedings of the Samahan  |
| 2025–01            | <b>Participant</b><br><i>2025 School on Synchrotron Light Sources and Their Applications, held online by the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste from January 13–24, 2025.</i>  |
| 2024–07            | <b>Participant</b><br><i>2024 Summer School on Lasers and Laser Applications, held at the Advanced Photonics Research Institute, Gwangju Institute of Science and Technology, Gwangju, South Korea, from July 15 to 19, 2024.</i>  |
| 2022–05            | <b>Participant</b><br><i>2022 Professional and Communications Training for Scientists, held online by the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste from May 23 to 27, 2022.</i>  |
| 2017–07            | <b>Participant</b><br><i>ILE-NIP Summer School in Physics and Laser Engineering, held at the Institute of Laser Engineering, Osaka University, Japan, July 23–30, 2017.</i>  |

## SCIENTIFIC PUBLICATIONS

### SCIE- and Scopus-indexed publication

R. B. Emperado, M.A.H. Zosa, L. L. Dasallas, & W. O. Garcia. Direct simulation Monte Carlo modeling of shock-plume interactions during laser-produced plasma expansion in a background gas. *Physics of Fluids* **37**(3), 036149 (2025).

### Doctoral Dissertation

R. B. Emperado, “Direct simulation Monte Carlo modeling of laser-produced plasma: expansion, instabilities, and deposition” Doctoral Dissertation, National Institute of Physics, College of Science, University of the Philippines Diliman, Quezon City (2025).

## **Undergraduate Thesis**

R. B. Emperado, “A DC glow discharge facility for undergraduate plasma physics experiments” Bachelor Thesis, National Institute of Physics, College of Science, University of the Philippines Diliman, Quezon City (2016).

## **SCIENTIFIC PRESENTATIONS**

### **International symposia, workshops, and schools**

R. B. Emperado, M.A.H. Zosa, L. L. Dasallas, & W. O. Garcia. Monte Carlo Simulation of Laser-Produced Plasma Expansion in Background Gas using SPARTA. *34th International Symposium on Shock Waves (ISSW34)*, held at EXCO, Daegu, South Korea, **July 2023**. (Poster)

R. B. Emperado, L. L. Dasallas, & W. O. Garcia. Direct Simulation Monte Carlo modelling of the flip-over effect in laser-produced plasma expansion using SPARTA. *32nd International Symposium on Rarefied Gas Dynamics (RGD32)*, Online, **July 2022**. (Contributed Talk)

R. B. Emperado, L. L. Dasallas, & W. O. Garcia. Direct Simulation Monte Carlo simulations of laser-produced plasma expansion using SPARTA. *Joint ICTP-IAEA Workshop on Atomic Processes in Plasmas: Data-driven Research*, Online, **December 2021**. (Poster, Best Poster Presentation Awardee)

R. B. Emperado, J.J. Miranda, N. Fernandez, W. O. Garcia, & R. V. Sarmago. Ultrafast pulsed laser deposition of BSCCO target on silicon substrate. *ICTP Asian Network School and Workshop on Complex Condensed Matter*, held at Suranaree University of Thailand, Nakhon Ratchasima, Thailand, **November 2018**. (Poster)

### **Locally held international conference presentations with refereed full papers**

R. B. Emperado, M. A. H. Zosa, and W. O. Garcia, Convergence test on ensemble-averaged direct simulation Monte Carlo modeling of laser-produced plasma. 43<sup>rd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Philippines Diliman, Quezon City, Philippines, June 25–28, **2025**. (Poster)

R. B. Emperado, M. A. H. Zosa, L. L. Dasallas, and W. O. Garcia, Kinetic modeling of plume-shockwave interactions during laser-produced plasma expansion in background gas. 42<sup>nd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Batangas State University, Batangas City, Philippines, July 3–6, **2024**. (Contributed Talk)

R. B. Emperado, M. A. H. Zosa, L. L. Dasallas, and W. O. Garcia, Direct simulation Monte Carlo modeling of eclipsed pulsed laser deposition using grid mesh-type masks. 42<sup>nd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Batangas State University, Batangas City, Philippines, July 3–6, **2024**. (Poster)

R. B. Emperado, L. L. Dasallas, and W. O. Garcia, Demonstration of the snow-plow effect in laser-produced plasma expansion in background gas using SPARTA. 40<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Legazpi City, Albay, Philippines, October 19–21, **2022**. (Contributed Talk)

R. B. Emperado, L. L. Dasallas, and W. O. Garcia, Demonstration of flip-over effect in laser-produced plasma expansion via Direct Simulation Monte Carlo method, 39<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, Online, October 20–22, **2021**. (Contributed Talk)

R. B. Emperado, M. A. H. Zosa, L. L. Dasallas, and W. O. Garcia, Thickness calculations of thin films prepared by pulsed laser deposition on revolved and rotated substrates, 38<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, Online, October 19–23, **2020**. (Contributed Talk)

R. B. Emperado, W. O. Garcia, and L. L. Dasallas, Simulation of the hydrodynamic expansion of plasma plume in pulsed laser ablation of copper, 37<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Tagbilaran City, Bohol, Philippines, May 29–June 1, **2019**. (Poster)

R. B. Emperado, J. J. Miranda, N. Fernandez, W. O. Garcia, and R. V. Sarmago, Ultrafast pulsed laser deposition of BSCCO target on silicon substrate, 36<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Puerto Princesa City, Palawan, Philippines, June 6–9, **2018**. (Poster)

R. B. Emperado, J. L. B. Sagisi, and W. O. Garcia, Construction and operation of a DC glow discharge facility for undergraduate plasma physics experiments, 34<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Philippines Visayas, Iloilo City, Philippines, August 18–21, **2016**. (Contributed Talk)

R. B. Emperado, J. L. B. Sagisi, J. I. I. Beringuela, and W. O. Garcia, Spatially-resolved spectroscopic measurements on the regions of an argon DC glow discharge, 33<sup>rd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of Northern Philippines, Vigan, Ilocos Sur, Philippines, June 3–6, **2015**. (Contributed Talk)

### **Co-authored proceedings in locally held international conference**

A. C. I. Quiamjot, R. B. Emperado, L. L. Dasallas, and W. O. Garcia, Three-dimensional DSMC simulations of plasma plume expansion under directional background gas. 43<sup>rd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Philippines Diliman, Quezon City, Philippines, June 25–28, **2025**.

V. A. Cabalar, R. B. Emperado, L. L. Dasallas, and W. O. Garcia, Investigating effects of varying parameters on eclipsed PLD through DSMC simulations using SPARTA. 41<sup>st</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Del Carmen Convention Center and Baya Numancia, Siargao Island, Surigao del Norte, Philippines, July 19–21, **2023**.

J. R. B. Grefal, R. B. Emperado, L. L. Dasallas, and W. O. Garcia, Effect of off-axis geometry on the thickness profile of film produced by vacuum thermal evaporation. 39<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held online, October 20–22, **2021**.

J. L. B. Sagisi, M. Celebrado, R. B. Emperado, and W. O. Garcia, Electron temperature and density measurements on helium DC glow discharge by optical emission spectroscopy. 35<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at Bayfront Hotel, Cebu City, Philippines, June 7–10, **2017**.

J. L. B. Sagisi, R. B. Emperado, and W. O. Garcia, Measurement of speed of sound in air using Lissajous curves. 34<sup>th</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Philippines Visayas, Iloilo City, Philippines, August 18–21, **2016**.

C. M. Olaya, R. B. Emperado, L. L. Dasallas, and W. O. Garcia, Measurement of speed of sound in air using Lissajous curves. 33<sup>rd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Northern Philippines, Vigan, Ilocos Sur, Philippines, June 3–6, **2015**.

J. I. Beringuela, J. J. Miranda, R. B. Emperado, and W. O. Garcia, Spectroscopic DC argon glow discharge experiment for undergraduate physics laboratories. 32<sup>nd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Philippines Diliman, Quezon City, Philippines, October 17–20, **2014**.

C. M. Olaya, R. B. Emperado, J. I. Beringuela, K. I. A. Lampa, and W. O. Garcia, Collisional energy transfer between helium and neon in a glow discharge. 32<sup>nd</sup> Samahang Pisika ng Pilipinas Physics Conference and Annual Meeting, held at University of the Philippines Diliman, Quezon City, Philippines, October 17–20, **2014**.