

CURRICULUM VITAE

YVES KIMBELE HERI

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RESEARCH INTERESTS

Sheath Physics and Plasma–Surface Interaction

Modeling emission-driven plasma sheaths at material boundaries using fluid descriptions, with a focus on inverse sheath formation, and the resulting redistribution of electron and ion fluxes near solid interfaces.

Space-Charge-Dominated Beam Dynamics and Plasma Interactions

Studying the dynamics of short-pulse charged particle beams in space-charge-dominated regimes, including particle transport, beam–plasma and beam–material interactions, plasma discharges, and self-field effects relevant to high-intensity beam and plasma systems.

Computational Plasma Modeling

Development of continuum and kinetic plasma models, numerical solvers, and data-driven methods, including machine learning techniques, to analyze plasma dynamics, identify model limitations, and improve predictive accuracy.

EDUCATION

Graduate Student <i>Nuclear Engineering & Radiological Sciences</i>	Second year
University of Michigan (Plasma, Beams, and Interface Science Group / Prof. Peng Zhang)	Ann Arbor, MI, USA
Master of Science <i>Electrical and Computer Engineering</i>	August 2022 – December 2024
Michigan State University	East Lansing, MI, USA
Master of Science <i>Mathematical Sciences</i>	August 2021 – June 2022
African Institute for Mathematical Sciences	Kigali, Rwanda
Master of Science <i>Electrical Engineering</i>	October 2015 – July 2017
University of Lubumbashi	Lubumbashi, Congo DR
Bachelor of Science <i>Electrical Engineering</i>	October 2012 – July 2015
University of Lubumbashi	Lubumbashi, Congo DR

ADDITIONAL EDUCATION

Graduate Certificate in Semiconductor Devices and Manufacturing	August 2022 - December 2024
Electrical and Computer Engineering — Michigan State University	East Lansing, MI, USA
Graduate Certification in Computational Modeling	August 2022 - December 2024
Computational Mathematics, Science and Engineering — Michigan State University	East Lansing, MI, USA
Graduate Certificate in Accelerator Science and Engineering	August 2022 - December 2024
Department of Physics and Astronomy — Michigan State University	East Lansing, MI, USA
High Energy Density Science Summer School	July 17-28, 2023
UC San Diego	La Jolla, CA, USA
2nd United States Low Temperature Plasma Summer School	June 26-30, 2023
University of Michigan	Ann Arbor, MI, USA

PROJECTS AND RESEARCH

Computational plasma physics and engineering <i>Doctoral Research</i> University of Michigan	Started in January 2025
Data analytics to identify electricity theft <i>Master Research</i> African Institute for Mathematical Sciences	January 2022 – June 2022
Design and realization of an optimized PV system <i>Master Research</i> University of Lubumbashi	October 2017 – April 2018
Comparison of classical PID tuning methods <i>Bachelor Thesis</i> University of Lubumbashi	April 2015 – December 2015

PAPERS AND CONFERENCES

Y. Heri and P. Zhang, "Space Charge Effects on Short-Pulse Electron Beam Dynamics," <i>2025 38th International Vacuum Nanoelectronics Conference (IVNC), Reykjavik, Iceland, 2025</i> . doi: 10.1109/IVNC65669.2025.11120901.	
Y. Heri and P. Zhang, "Space Charge Effects on Short-Pulse Electron Beam Dynamics in a Classical Vacuum Diode," <i>IEEE Transactions on Electron Devices</i> , 2025. doi: 10.1109/TED.2025.3552061	
Y. Heri and P. Zhang, "Space Charge Limited Current Scaling for Short-Pulse Beam in a Vacuum Diode with Different Pulse Shapes," <i>2024 Joint International Vacuum Electronics Conference and International Vacuum Electron Sources Conference (IVEC + IVESC), Monterey, CA, USA,, 2024</i> . doi: 10.1109/IVECIVESC60838.2024.10694914	
Y. Heri and P. Zhang, "Space charge effects on the short pulse beam profile," <i>2023 IEEE International Conference on Plasma Science (ICOPS), Santa Fe, NM, USA, 2023</i> . doi: 10.1109/ICOPS45740.2023.10480963	
Space Charge Effects on the Evolution of Short Pulse Beam Profiles Poster presentation at the 76th Annual Gaseous Electronics Conference 2023	October 2023
Price dynamics for net electric energy metering on a distribution network Paper presentation at 2021 IEEE PES/IAS PowerAfrica	August 2021
Modelling of LV distribution network with preassembled aluminum cables ISTE OpenScience	June 2020

WORK EXPERIENCE

Graduate Research Assistant University of Michigan <ul style="list-style-type: none">Research in Plasma Science and Engineering	Started in January 2025 Ann Arbor, MI, USA
Graduate Research Assistant Michigan State University <ul style="list-style-type: none">Research in Electrical and Computer Engineering	August 2022 - December 2024 East Lansing, MI, USA
Assistant Lecturer University of Lubumbashi <ul style="list-style-type: none">Lecturing and student supervisionResearch	Started in May 2018 Lubumbashi, Congo DR
Intern Engineer CHEMAF Usoke <ul style="list-style-type: none">Engine preventive maintenanceCalculation of electrical conduits	May 2017 – October 2017 Lubumbashi, Congo DR

HONORS AND AWARDS

Best Presentation Award - 14th MIPSE Graduate Symposium The best poster presentation award at the 14th MIPSE symposium in Ann Arbor, Michigan	November 2023
AIMS Rwanda Excellence Award For the best student performance of the African Institute for Mathematical Sciences in 2022.	June 2022
MasterCard Foundation Scholar The program aims to develop a cohort of ethical, enterprising and energetic young leaders who will lead and direct socio-economic transformation in Africa.	February 2022
AIMS Rwanda Scholarship Merit-Based Scholarship to Pursue Masters Program in Mathematical Sciences	August 2021
MMG Scholarship for academic excellence Merit-Based Scholarship to Support Engineering Students with High Achievements at University of Lubumbashi.	2016
Best Laureate in Electronic for the State Exam in the Katanga Province	2012

TEACHING EXPERIENCE

Programmable logic systems - ESI University of Lubumbashi	2020 – 2021 Lubumbashi, Congo DR
Power distribution networks - ESI University of Lubumbashi	2019 – 2020 Lubumbashi, Congo DR
Physics - Electromagnetism University Katumba-Mwanke	2018 – 2019 Kasenga, Congo DR

COMMUNITY INVOLVEMENT

Mount Hope tutoring program Assisting student of public schools with their weekly assignments and homeworks.	Started in November 2022 Lansing, MI, USA
Head of the scientific department of the cultural center of ESI In charge of organizing lectures given by various guest researchers and personalities.	2015 – 2017 Lubumbashi, Congo DR
Soccer team assistant-manager Manager of Kids from my neighborhood who wanted to enroll in a soccer tournament but lacked adequate supervision.	2015 Lubumbashi, Congo DR
Volunteer Teacher of the basics of programming and robotic Teaching the basics of programming and robotics to several categories of youth ranging from elementary school to university level.	Started in 2020 Lubumbashi, Congo DR

SKILLS

Languages: English, French (Native), Swahili
Programming: Python (Pandas, PlasmaPy, TensorFlow, Keras, scikit-learn), C, C++, MATLAB, Mathematica, Java
Document Creation: LaTeX, Markdown, Microsoft Office Suite