

Personal data

Name: Luis Alonso, Surname: Araya-Solano.

Residence address: Cartago, Costa Rica, 30102

Mobile phone: (+506) 85635248. Residence phone: (+506) 24797824

e-mail: e7001a@gmail.com

Academic background

2019, Approved course on Photovoltaic Systems given by SESLab, Costa Rica Institute of Technology.

2017- Participation in the 16th Latin American Workshop on Plasma Physics, Mexico.

2014- Participation in the 15th Latin American Workshop on Plasma Physics; Costa Rica.

2012- Master degree “European Master in Nuclear Fusion Science and Engineering Physics”, given at inter-university level by Ghent University, Universidad Carlos III de Madrid, Université de Lorraine Nancy-Metz.

2010- Approved courses of the Medical Physics Master, Universidad de Costa Rica.

2009- Bachelor degree in Physics, Universidad de Costa Rica.

2007- Complementary studies, Certificate of Basic Radiological Protection, Universidad de Costa Rica.

Working Experience

2018 to date, Costa Rica Institute of Technology (TEC), I am working in a research project for which the main objective is the set-up of a small modular *stellarator* (SCR-1). For this project; I'm in working on the implementation of the magnetic diagnostics, particularly, the design and construction of the *Rogowski*, *Mirnov* and *Diamagnetic Loop* diagnostics. I'm also involved in the simulation of plasma heating scenarios using *electron cyclotron resonance heating* systems as well as the operation of a plasma radiation measuring bolometer. Additionally, I'm participating in a project about the development of an integral method of detection of suboptimal conditions in large scale photo-voltaic systems.

2015-2017, TEC, I worked on the re-commissioning of the low aspect ratio *spherical tokamak* MEDUSA-CR as a research project with *Group of Plasma and Applications* of TEC (<http://plasma.ietec.org/>). In this project I worked on the MHD equilibrium simulation of the magnetic confinement of MEDUSA-CR. I learned about equilibrium simulation codes like EFIT and VMEC and I used a free boundary equilibrium solver (called FIESTA) to calculate parameters for optimal confinement. Additionally, I made a visit to the Princeton Plasma Physics Laboratory; where I learned about the EFIT simulation code used in the NSTX-U device.

2015-to date, TEC, I am working as lecturer at TEC; teaching courses of General Physics for engineering; in which I cover the subjects of Fluids Dynamics and Thermodynamics.

2012, CIEMAT (Spain), I have developed my master thesis over the optical properties (ionoluminescence and optical absorption) of implanted silica as prospects materials to be used in diagnostic systems for the ITER fusion reactor.

2011, Jean Lamour Institute (France), I made a short research about etching of carbon components (plasma facing components) in a radio frequency plasma reactor and I also worked on the characterization of the coupling modes of a low magnetic field helicon configuration plasma reactor.

2010, University of Costa Rica, I lectured courses of General Physics (Classical Mechanics) for engineering careers.

Miscellaneous skills

I have an advanced English level (oral and written), as well as a basic French level. I have acquaintanceship with softwares like MATLAB, ANSYS and Origin. Additionally; I have experience coding with Python and C++.

Soft skills

I am always open to group working. I am a person with commitment capabilities. I like to develop my work at the most optimal way possible.

Publications

- Jiménez, D., Campos-Duarte, L., Solano-Piedra, R., Araya-Solano, L.A., Meneses, E., Vargas, I. (2019, September). **BS-SOLCTRA: Towards a Parallel Magnetic Plasma Confinement Simulation Framework for Modular Stellarator Devices**. In Latin America High Performance Computing Conference (CARLA2019), September 25-27, 2019, Turrialba, Cartago, Costa Rica ..
- R. Solano-Piedra, A. Köhn, V.I. Vargas¹, E. Meneses, D. Jiménez, A. Garro-Vargas, Zamora¹, L.D. Chavarría, L.A. Araya-Solano, D. López-Rodríguez J. Sánchez-Castro, J. Asenjo¹ and J. Mora, **Full-wave simulation of mode-converted electron Bernstein waves at very low magnetic field in the SCR-1 Stellarator**, European Physical Society Conference on Plasma Physics, Czech Republic, 2018.
- L.A. Araya-Solano et al. **Equilibrium simulation for the magnetic confinement of the Spherical Tokamak MEDUSA-CR**, IEEE Xplore Digital Library, October 2017.
- V.I. Vargas, J. Mora, L.A. Araya-Solano, A.M. Rojas-Loaiza, J.M. Arias-Brenes, J. F. Rojas, J.I. Monge, N. Piedra-Quesada, **Progress on Re-commissioning of the Spherical Tokamak MEDUSA in Costa Rica**, 23rd IAEA Technical Meeting on the Research Using Small Fusion Devices, March 2017, Santiago de Chile, Chile.
- V.I. Vargas, J. Mora, L.A. Araya-Solano, A.M. Rojas-Loaiza, J.M. Arias-Brenes, J. F. Rojas, J.I. Monge, A. Canizales, E. Acuña, N. Piedra-Quesada, **Re-commissioning of the Spherical Tokamak MEDUSA in Costa Rica**, 26th IAEA Fusion Energy Conference (FEC IAEA), October 2016, Kyoto, Japan.
- V.I. Vargas; J. Mora, C. Otarola, R. Solano-Piedra, J. Asenjo, L. Barillas, L.A. Araya-Solano, **Engineering review of Fusion research in Costa Rica**; IEEE symposium on Fusion Engineering SOFE 2017; June 2017, Shanghai, China.