

Silvana Ovaitt *(nee Ayala Peláez)

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Objective

Multidisciplinary engineer with excellent problem-solving abilities and communication skills. Background in Solar Photovoltaics, Electrical, and Optical Engineering. I seek to work in a company that embraces research, innovation, and promotes opportunities for collaboration, teamwork, as well as science outreach and advocacy.

Education Details

Ph.D. in Electrical and Computer Engineer, University of Arizona Dissertation Title: Bifacial solar systems modeling and performance Minor in Neurosciences	December 2018
Master of Science, Optics, University of Arizona	September 2018
Master of Science, Electrical and Computer Engineer, University of Arizona	May 2016
Master of Fine Arts in Creative Writing, University of Texas at El Paso Awards: Student Marshal, Outstanding Graduate Student	May 2011
Bachelor of Engineering in Mechatronics, ITESM CSN, Mexico Awards: Honorific Mention, Total Young Award (best promotion student), Valedictorian, Distinguished Mechatronics Student Award, Outstanding Cultural Department Student Award	December 2007
Pontificia Universidade Católica do Paraná, Curitiba, Brasil, Semester Abroad	2006
International Business Development Exchange Program Science and Technology Park from the UofA Designed a Solar Boiler System, project winner of the Technological Entrepreneurs of ITESM, 2004. Tailored a business plan and strategy for an incubator company, Earth Knowledge, to enter the Mexican market.	2005

Work Experience

Research Scientist, National Renewable Energy Laboratory, July 2020-present

- Previous related positions at NREL: Postdoctoral Researcher in Physics (January 2019-July2020, and Graduate Research Intern (May 2017-December 2018)
- Established myself as a bifacial PV expert and gained the trust of national and international collaborators and researchers with >20 different publications, oral presentations at conferences, posters, and webinars in the past year.
 - Participated in the achievement of milestones in the Optimized Bifacial PV System project (SETO 34367 / 34910) with the development of the open-source models to simulate bifacial PV performance, instrumentation, and validation of models with field data, the leveraging of High-Performance Computing (HPC) to optimize bifacial system design and building of an US and international stakeholder community.
 - Draft quarterly and yearly reports, milestone completion reports, and international presentations and meetings.
 - Focus on industry and stakeholder interaction and support through developing bifacial evaluation open-source tools (bifacial_radiance, bifacialvf, System Advisory Model) and research methods and data for the bifacial community.
- Co-Project Investigator for NREL's Hands-on PV Workshop since 2021. Led activities and active participation since 2018
 - Interact with students, PI's, Colorado School of Mines, DOE for reviews and sponsorship of the project, and NREL staff to successfully coordinate the logistics for this project.
 - First involvement as an attendee in 2017. In 2018, directed a Spectral Mismatch Corrections video for that year's cohort and led a Concentrator PV challenge.
 - Evaluating the workshop through an Educational Research Instrument for Hands-On Experiential evaluation in a journal publication in preparation.

- Leader in the PV in the Circular Economy Project, procuring 480k of funding for the FY22 cycle. Projects include developing PV ICE, a framework for material, energy, and decarbonization goals of Circular Economy for a sustainable Energy Transition.
 - Research included in the Solar Futures Study published by DOE in 2021.
 - Invited speaker at SETO's Circular Economy Workshop (2021), with main US CE stakeholders in attendance.
 - Supported proposal for Puerto Rico 100 section for evaluating the circular economy and life cycle assessments of PV in this project. Also key contributor to a proposal for a multiple Renewable Energy Sources study under the circular framework lens for Microsoft.
 - Supported with coordination and writing of the Circular Economy for Energy Materials – Advanced Energy Materials and Technology Strategic Plan of NREL report on October 2021.
 - Work featured in NREL.Gov on April 22, 2022: <https://www.nrel.gov/news/program/2022/working-out-the-details-of-a-circular-solar-economy.html>
- Collaborator in the backsheet UV-degradation project with Dr. M. Kempe (NREL), a project with NIST, DuPont, Case Western University, and others. Tasks include mentoring an undergraduate researcher and implementing a joint model of spectral irradiance, raytrace, and material properties for evaluating degradation and validating the model with a PV testbed at NIST.
- Agricultural PV enthusiast and researcher of PV energy modeling working with NREL's Strategic Energy Analysis Center to evaluate the use of bifacial PV modules in various deployment setups and their effect on underlying crops, as well as the combined PV and agricultural performance.
 - Grants submitted as a PI for a SETO SBIR and for a U.S.-India Science & technology Endowment Fund (USISTEF) call, collaborating with Sunseed APV for a comprehensive photovoltaic-agricultural performance model development.
 - Puerto Rico Agrivoltaics Design researcher as part of a team developing a coffee-plantation PV research testbed through NREL'S INSPIRE project.
- Committees & International Leadership :
 - BifacialPV Organizing Committee: involved in the organization of the 2020 and 2022 bifacial PV Workshops, in collaboration with Sandia National Labs, ISC Konstanz, PVEL and others. Increased workshop visibility by developing and managing website and proceedings of the workshops (<http://bifipv-workshop.com/>).
 - PVSC Committee involvement: 2021-2022 Women in PV Chair and Diversity & Inclusion Oversight Committee member. Drafted Code of Conduct and Diversity Statement for Conference and oversaw diversity and inclusion events and attendee resources at the conference. In 2020 as a High School Competition Chair and previous year supporter, I supported this competition that seeks to enable and include Tier I students into the PV community. Various other participations such as a workshop instructor (only female and postdoc led one), sub-area chair, and communications newsletter support.
- International Leadership:
 - Lead of Activity 1.2 of IEA PVPS Task 13, "bifacial PV performance modeling comparison." Responsibilities included planning and organizing the activity, which had more than 15 international institutions, drafting the results report for the bifacial modeling section and the bifacial field (30% of report) as well as reviewing throughout.
 - IEA PVPS Task 13 Member supporting bifacial research on trackers for the 2022-2024 cycle.
 - Working member of Task Group 15 of PVQAT, focused on repair, reuse, recertification, and recycling of PV.
- Mentored formally 2 SULI interns, 3 graduate student interns, and 2 undergraduate interns to date.
- Involvement in other NREL Outreach Activities: + 30 hours volunteered in 2019 at outreach events, including Science Bowls, SoapBox Science, Pint of Science, and other NREL and QESST Outreach events.
 - Selected as 1 of 20 members of national laboratories and industry for the 2022 Climate-Tech Policy Boot camp, organized by the Information Technology and Innovation Foundation (ITIF), to take place on Washington DC June 5-10 of 2022.
 - NREL Ambassador. 2018-2022. Received training for sharing NREL mission and public speaking. Various outreach opportunities attended as part of the program.

Graduate Research Assistant, Photonics System's Lab, University of Arizona, Spring 2014-present

- Created a bifacial rear-irradiance model in FRED Optical Raytrace Software, with a framework to simulate spectral rear-irradiance by creating a cumulative sky-model with a Perez distribution by wavelength calculated by the spectral DNI and DHI modeling software SMARTS2.
- Modeled and calculated solar panels yearly energy yields for different solar applications (spectrum splitting systems, solar-thermal,

bifacial PV). Utilized raytrace and electrical response modeling.

- Researched on the use and fabrication of holographic optical components to improve photovoltaic performance in concentrating and spectrum splitting systems, given the sunlight's spectral content, spatial extent, and angular divergence.
- Mentored undergraduate students in the laboratory. Instructing on lab methodology and bifacial / PV concepts, as well as leading experiments, and provided support for grant proposals.
- Teaching Assistant for two graduate/undergraduate courses (Photovoltaic Solar Energy, and Holographic and Diffractive Optics, from 2014-2017. Imparted bi-weekly laboratories, designed course material, graded, and held office hours for 20-50 students per semester. Awarded the Outstanding Graduate Teaching Award in Spring 2017.

Vice-president (2017) & member (present) Student Leadership Council of QESST, a NSF Engineering Research Center (ERC)

- Mentor and organizing staff on the High School Competition at the 7th World Conference on Photovoltaic Energy Conversion (WCPEC) for Kealahou High School and Waikeke High School in Hawaii. Also mentored students as part of Arizona State University's Research Experience for Undergraduates (ASU REU).
- Chief editor and designer of the Outreach Book: Hands-on PV, an Outreach Guide (published in March 2018).
- Organized multi-university online webinars, Industry visits (in person and online) and participated in creating and donating a Photovoltaic system to a Campsite in Tonto, AZ.
- 2nd place winner of internal Perfect Pitch competition. Presented the pitch to the NSF review team at the 2017 site visit.
- Web manager of QESST.org (2016 to 2019). Implemented accessibility practices throughout the website for persons with disabilities and revamped the Educational website content.

Internship at REhnu, Spring 2016-Summer 2016

- Recipient of the UA Ren Future Leaders Fellowship, 2016, to fund this internship.
- Analyzed performance data from a high-concentration photovoltaic system (HPV) to maximize power output and increase the system's conversion efficiency.
- Investigated degradation of the HPV multijunction solar cells. Created software for clear-sky detection on the data, correcting for irradiance and temperature to evaluate degradation. Also measured IV-curves of degraded and control cell samples at different levels of concentration (between 0.3 and 1000x suns on a flash-test solar simulator), performed EL and PL measures on the samples.
- Modeled the HPV system in Solid-Works and non-sequential ray-tracing program FRED to calculate tolerances and possible improvements.

Graduate Research Assistant, Higgins Laboratory, University of Arizona, Fall 2012-Spring 2014

- Closed-loop experiments with real-time data acquisition from the visual system of dragonflies. Tasks included capturing the insects, dissection under the microscope, making lab-made electrodes, and capturing the ventral-nerve-cord (VNC) signal with the electrodes by tuning various amplifiers and signal-processing equipment to reduce the signal-to-noise ratio.
- Solidworks design for several laboratory projects and signal-processing coding for the closed-loop experiments.
- Analysis and data collection of sleep EEG signals on a human clinical study, utilizing wavelet transforms.

Skills

Computer: Python, bifacial_radiance, RADIANCE, HPC, AWS3, FRED, Matlab, LabView (Certified), C++, Solid Works

Languages: Spanish (Native)
English, Advanced (TOEFL IBT: 110 points, March 2008)
Portuguese, Advanced
French, Intermediate (DELF B1)
German, Novice (3 years). Last class: GER 202, Spring 2015.

Journal Publications

- Ovaitt, S., Mirlletz, S., Seetharaman, S., Barnes, T. PV in the Circular Economy, a dynamic framework analyzing technology evolution and reliability impacts. *iScience*, 2022. <https://doi.org/10.1016/j.isci.2021.103488>
- Ayala Pelaez S, Deline C, Greenberg P, Stein JS, Kostuk RK. Model and validation of single-axis tracking with bifacial PV. *IEEE J Photovoltaics*. 2019;9(3):715–21. <https://doi.org/10.1109/JPHOTOV.2019.2892872> (pre-print conference open-version: <https://www.nrel.gov/docs/fy19osti/72039.pdf>)
- Ayala Pelaez, Deline C, MacAlpine M, Marion B, Stein J, Kostuk K. Comparison of Bifacial Solar Irradiance Model Predictions with Field Validation. *IEEE J Photovoltaics*. 2019; 9(1):82–87. <https://doi.org/10.1109/JPHOTOV.2018.2877000>

- Ayala Pelaez, Deline C, “bifacial_radiance: a python package for modeling bifacial solar photovoltaic systems,” Journal of Open Source Software, 2020 <https://doi.org/10.21105/joss.01865>

Proceedings Publications and Presentations (1st author)

- Ovaitt, Silvana, et al. Measuring and Modeling Bifacial Technologies. 2022 bifiPV Konstanz-virtual. (Proceedings publication pending release).
- Ovaitt, Silvana, Heather Mirlletz, and Acadia Hegedus. (2021). NREL/PV_ICE: Release version 2 (v0.2.0). Zenodo. <https://doi.org/10.5281/zenodo.5196342>
- Ovaitt, S., Mirlletz, H., Hegedus, A., Gaulding, A. Barnes, T. PV Evolution in the light of Circular Economy. 48th IEEE PVSC Conference, June 2021. <https://doi.org/10.1109/PVSC43889.2021.9518683> or <https://www.nrel.gov/docs/fy21osti/78989.pdf>
- Ayala Pelaez, S., Deline, C., Marion, B., Sekulic, B., McDanold, B., Parker J., Stein, J.S. NREL Bifacial Field Update. 2021 PVRW Conference (virtual).
- Ayala Pelaez, S., Deline, C., Marion, B., Sekulic, B., McDanold, B., Parker J., Monarch, M., Stein, J.S. Ultimate Bifacial Showdown: 75kW Field Results. 7th bifiPV Workshop (virtual) 2020 Proceedings. <https://www.nrel.gov/docs/fy20osti/77486.pdf>. Video: <https://www.youtube.com/watch?v=q-IXhGDFrIE>
- Ayala Pelaez, S., Deline, C., Marion, B., Sekulic, B., McDanold, B., Parker J., Stein, J.S. (2020). Field-Array Benchmark of Commercial Bifacial PV Technologies with Publicly Available Data” 47th IEEE PVSC Conference.
- Ayala Pelaez S, Deline C, Stein JS, Marion B, Anderson K, Muller M. Effect of torque-tube parameters on rear-irradiance and rear-shading loss for bifacial PV performance on single-axis tracking systems. In: *46th IEEE Photovoltaic Specialists Conference Proceedings, Chicago IL*. 2019. Proceedings preprint NREL: <https://www.nrel.gov/docs/fy20osti/73203.pdf>. Presentation: <https://www.nrel.gov/docs/fy19osti/74236.pdf>.
- Ayala Pelaez S, Deline C, Marion B, Muller M, Stein J, Stark C. The Subtle Art of Bifacial Performance Modeling. In: 12th PVP/MC, Albuquerque, NM. 2019. <https://www.nrel.gov/docs/fy19osti/74009.pdf> and <https://pvpmmc.sandia.gov/resources-and-events/events/2019-12th-pv-performance-modeling-and-monitoring-workshop/>
- (Presented at conference; 2nd author). Deline C, Ayala Pelaez S, MacAlpine S, Olalla C. Bifacial PV System Mismatch Loss Estimation & Parameterization. Presented in: 36th EU PVSEC, Marseille Fr. Slides: <https://www.nrel.gov/docs/fy19osti/74885.pdf>. Proceedings preprint NREL: <https://www.nrel.gov/docs/fy20osti/73541.pdf>. NREL/PR-5K00-74885
- Ayala Pelaez, S., Deline, C., Macalpine, S., Marion, B., Stein, J. S., & Kostuk, R. K. (2018). Model and Validation of Single-Axis Tracking with Bifacial PV. Presented at the *7th World Conference on Photovoltaic Engineering Conversion*, nominated for Best Student Presentation, and invited for publication in Journal of Photovoltaics. <https://doi.org/10.1109/JPHOTOV.2019.2892872>
- Ayala Pelaez, S., Deline, C., Greenberg, P., Stein, J. S., Kostuk, R. K. (2018). *Single Axis Tracked Bifacial Results*. Presented at *5th Bifacial PV Workshop*, Denver, US.
- Ayala Pelaez, S., Tan, S. X., Chrysler, B., Zhao, J., Kostuk, R. K. (2018). *Holographic cap collectors for enhanced mid-day energy production of vertically mounted bifacial photovoltaic modules*. In *Proc. SPIE 10758, Nonimaging Optics: Efficient Design for Illumination and Solar Concentration XV*, 107580P; doi: 10.1117/12.2321678. <https://doi.org/10.1117/12.2321678>
- Ayala Pelaez, S., Vorndran, S., Wu, Y., Chrysler, B., & Kostuk, R. K. (2016). *Segmented holographic spectrum splitting concentrator*. In *SPIE Optics+ Photonics for Sustainable Energy* (pp. 99370L-99370L). <https://doi.org/10.1117/12.2236699>
- Ayala Pelaez, S., Wu, Y., Vorndran, S., Santiago, R. P., & Kostuk, R. K. (2015). *Model and analysis of solar thermal generators to reduce the intermittency of photovoltaic systems with the use of spectrum splitting*. In *SPIE Optics+ Photonics for Sustainable Energy* (pp. 95590B-95590B). International Society for Optics and Photonics. <https://doi.org/10.1117/12.2187071>
- Ayala Pelaez, S., Gomez, M, International Business Development Exchange Program. In *Consortium for North America Higher Education Collaboration CONAHEC*, (2005): 112-118.

Posters

- Ayala Pelaez, S., Mirlletz, H., Silverman, T., Carpenter, A., Barnes, T. “De-fluffing Circular Economy Metrics with Open-Source Calculator for PV,” presented at the 2020 PV Reliability Workshop, in Lakewood CO.
- Ayala Pelaez S, Deline C, MacAlpine S, Olalla C. Bifacial PV system mismatch loss estimation. Poster presented at the 6th BifiPV Workshop, Amsterdam 2019. <https://www.nrel.gov/docs/fy19osti/74831.pdf> and <http://bifipv-workshop.com/index.php?id=amsterdam-2019-program>

- Ayala Pelaez, S., Deline, C., MacAlpine, S., Marion, B., Stein, J. S., Kostuk, R. K. (2018). [Comparison of Bifacial Solar Irradiance Model Predictions with Field Validation](#). Presented at the *10th Photovoltaic Systems Symposium (PVPMC)*, Albuquerque, US, 2018.
- Ayala Pelaez, S., Deline, C. “The Path Forward: Optimized Bifacial PV systems,” presented at the 2019 International School for Materials for Energy and Sustainability VIII (ISMES VIII), in Caltech, CA.

Webinars

- (co-presenter) Barnes, Teresa M., Silvana Ovaitt, Heather Mirletz. The impacts of Module Reliability and Lifetime on PV in the Circular Economy. Duramat Webinar April 2021.
- Ayala Pelaez, S., Deline C., Marion, B., et al. “Understanding bifacial PV modeling: raytracing and View Factor Models,” as part of PV Magazine Webinar “View-factor vs. ray tracing – which bifacial modeling techniques should you use?”, Dec. 18th.
- (co-presenters) Deline, C.*, Ayala Pelaez*, S, Marion, B. et al. “Understanding bifacial PV’s potential: field performance,” as part of Taiyang News Webinar “Bifacial solar’s True Potential,” Dec. 3rd. Slides: <https://www.nrel.gov/docs/fy20osti/75532.pdf>. Youtube: <https://www.youtube.com/watch?v=uRvxo17Y-Hg&feature=youtu.be>
- Ayala Pelaez, S., Deline, C., bifacial radiance training. Webinar by NREL, Oct 17, 2019. Slides: <https://www.nrel.gov/docs/fy20osti/75218.pdf> Youtube: <https://www.youtube.com/watch?v=1X9L-R-RVGA>

Tutorials

- Silvana Ovaitt, Mark Mikofski, Kevin Anderson. PVlib Tutorial. PVPMC 2022.
- Data and Tools to Model PV. pyData Global 2021 Solar. Kevin Anderson, Mark Mikofski, Abhishek Parikh, Silvana Ovaitt. <https://www.youtube.com/watch?v=sweUakFg3I8> or <https://lnkd.in/gFrGXbiW>
- SUPERGEN SuperSolar 9th Workshop, “Bifacial PV Devices & Systems: An Intro & Modeling”. Silvana Ovaitt, April 27, 2022
- PubHub PR-5K00-74100. Publication Title: Workshop: Status and Issues on Si PV (Archive Only). Author: Silvana Ayala Pelaez. Workshop presented at the 46th PVSC conference in Chicago, IL. 2019.
- Tutorial AM2: Solar PV Resources Modeling 101: From Sun Position to AC Output. Silvana Ayala Pelaez, Kevin Anderson, Mark Mikofski. Workshop presented at the 48th PVSC conference in Chicago, IL. 2019.

Other Notable Collaborations

- Heath, Garvin, Ravikumar, D., Ovaitt, S. Walston, L., Curtis, T., Millstein, D., Mirletz, H., Hartmann, H., McCall, J. Environmental and Circular Economy Implications of Solar Energy in Decarbonized U.S. Grid. 2022 Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-80818. <https://www.nrel.gov/docs/fy22osti/80818.pdf>.
- U.S. Department of Energy. Solar Futures Study. September 2021. <https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf>
- Mirletz H, Ovaitt S, Sridhar S, Barnes T. Circular Economy Priorities for Photovoltaics in the Energy Transition. 2022 Mar 26; Submitted to PLOS ONE
- Mirletz H, Ovaitt S, Barnes TM. Short-Lived Modules Need to be Efficient, Lightweight, and Circular for the Energy Transition. In: PVRW 2022 Proceedings, NREL 2022.
- Brown, M., Ovaitt S., Kempe, M. UV Degradation in Backsheets: a ray-tracing irradiance simulation approach. In: PVRW 2022 Proceedings, NREL 2022.
- Sherif A. Khalifa, Benjamin V. Mastrococco, Dylan D. Au, Silvana Ovaitt, Teresa M. Barnes, Alberta C. Carpenter, Jason B. Baxter. Dynamic Material Flow Analysis of Silicon Photovoltaic Modules to Support a Circular Economy Transition. Progress in Photovoltaics, 2022. <https://doi.org/10.1002/pip.3554>
- Hegedus, Acadia, Silvana Ovaitt, Julien Walzberg, Heather Mirletz, and Teresa Barnes. A Circular Economy evaluation of Waste-Management Scenarios. 2021 MRS Fall Meeting and Exhibit
- Hegedus, A, Ovaitt, S, Walzberg, J., Mirletz, H, Barnes, T. Evaluating material circular efficacy of waste-management scenarios using PV ICE (PV in the Circular Economy Tool). Poster presented at the 2021 SULI Internship Poster Session at NREL <https://www.nrel.gov/docs/fy21osti/80715.pdf>
- Sinha, Archana; Sulas-Kern, Dana; Owen-Bellini, Michael; Spinella, Laura; Ulicna, Sonja; Ayala Pelaez, Silvana; Johnston, Steve; Schelhas, Laura; Sinha. Glass/Glass Photovoltaic Module Reliability and Degradation: A Review”, Journal of Physics D, 2021
- Barnes, Teresa M., Silvana Ovaitt, Heather Mirletz. High Reliability PV for a Sustainable Energy Transition. 2021 Terawatt Workshop Keynote

- Gostein, M., Ayala Pelaez, S., Deline, C., Habte, A., Hansen, Clifford W., Marion, B., Newmiller, J., Sengupta, M., Stein, J.S., Suez, I. Measuring Irradiance for Bifacial PV Systems. *48th IEEE Photovoltaic Specialists Conference Proceedings*, 2021. <https://doi.org/10.1109/PVSC43889.2021.9518601>; or <https://www.nrel.gov/docs/fy21osti/80281.pdf>
- Stein, J.S., C. Reise, et al. (2021). IEA-PVPS T13-14:2021: Bifacial Photovoltaic Modules and Systems: Experience and Results from International Research and Pilot Applications. <https://pvpmc.sandia.gov/download/8127/>
- Deline, C., Ayala Pelaez, S., MacAlpine, S., Olalla, C. Estimating and Parameterizing Mismatch Power Loss in Bifacial Photovoltaic Systems. *Progress in Photovoltaics*, March 2020. <https://doi.org/10.1002/pip.3259>
- Monarc, Mark, Ayala Pelaez, S. Analysis and Validation of Spectral Irradiance Simulations for 75kW Bifacial Solar Test Field. Poster presented at the 2020 SULI Internship Poster Session at NREL. <https://www.nrel.gov/docs/fy20osti/77582.pdf>
- Deline C, Ayala Pelaez S, Marion B, Sekulic B, Woodhouse M, Stein J. Bifacial PV System Performance: Separating Fact from Fiction. Keynote presentation at the *46th IEEE Photovoltaic Specialists Conference*, Chicago IL 2019. <https://www.nrel.gov/docs/fy19osti/74090.pdf>
- Deline C, Ayala Pelaez S, Marion B, Sekulic B, Woodhouse M, Stein J. Bifacial Tracking Testbed at NREL. Poster presented at the 6th BifiPV Workshop, Amsterdam 2019. <https://www.nrel.gov/docs/fy19osti/74831.pdf>
- Deline, C., MacAlpine, S., Stein, J. S., Toor, F., Ayala Pelaez, S. (2017). [Bifacial PV Performance Models: Comparison and Field Results](#). Presented at *4th Bifacial PV Workshop*, Konstanz, Germany.
- Stalcup, T., Angel, R., Strittmatter, P., Whiteside, A., Geary, A., Sodari, F., ...& Ayala Pelaez, S. (2016). [REhnu dish-based CPV: Module performance and planned 100 kW plant](#). In M. Wiesenfarth, & A. Bett (Eds.), *AIP Conference Proceedings* (Vol. 1766, No. 1, p. 020006). AIP Publishing.
- Chrysler, B. D., Ayala Pelaez, S., Wu, Y., Vorndran, S. D., & Kostuk, R. K. (2016). [Environmental stability study of holographic solar spectrum splitting materials](#). In *SPIE Optics+ Photonics for Sustainable Energy* (pp. 99370N-99370N). International Society for Optics and Photonics.
- Perci, R., Ayala Pelaez, S., Wu, Y., Kostuk, R. K. (2015). [Hybrid Photovoltaic-Thermoelectric generator for compensating variability in solar illumination](#). Presented at the *2015 Latin American Research Programs*.
- Vorndran, S., Russo, J. M., Wu, Y., Ayala Pelaez, S., & Kostuk, R. K. (2015). [Broadband Gerchberg-Saxton algorithm for freeform diffractive spectral filter design](#). *Optics Express*, 23(24), A1512-A1527.
- Wu, Y., Vorndran, S. D., Russo, J. M., Ayala Pelaez, S., & Kostuk, R. K. (2014). [Design of folded holographic spectrum-splitting photovoltaic system for direct and diffuse illumination conditions](#). In *SPIE Solar Energy+ Technology* (pp. 91750G-91750G). International Society for Optics and Photonics.

Books

- Ayala Pelaez, S., Jordan, M. E. (2018) [Solar Outreach Activities Handbook](#). QESST Editorial. ISBN: 978-0-692-98767-1. pp. 208. Also available as an online version.

Datasets

- NREL Bifacial Experimental Single-Axis Tracking Field Data – Data and Resources. June 2020. <https://doi.org/10.21948/1787805>
- NREL Bifacial PV test-bed irradiance measurements. December 2019. <https://doi.org/10.7799/1578176>

Dataset Visualization Dashboards

- Acadia Hegedus, Heather Mirlitz, Silvana Ovaitt. Open EI: PV Evolution in the Light of Circular Economy. Companion dashboard to 48th IEEE PVSC Proceedings, same title. https://openei.org/wiki/PVSC_PVICE
- Acadia Hegedus, Heather Mirlitz, Silvana Ovaitt. Open EI: PV in the Circular Economy. Companion dashboard to submitted paper Ovaitt, S., et al. PV ICE: A dynamic evaluation tool for Photovoltaic technology evolution in the Circular Economy. https://openei.org/wiki/PV_ICE

Media Articles

- Article
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Github Repositories

- PROFILE: <https://github.com/shirubana>
- Principal contributor: https://github.com/NREL/bifacial_radiance. DOI 10.5281/zenodo.3860350.

- Owner and Main contributor: <https://github.com/NREL/bifacialvf>
- Owner and Main contributor: https://github.com/NREL/PV_ICE
- Owner and Main contributor: <https://github.com/NREL/pySMARTS>
- Main Contributor: <https://github.com/NREL/PVDegradationTools>
- Main Contributor: <https://github.com/PVSC-Python-Tutorials/PVSC48-Python-Tutorial>
- Contributor: <https://github.com/GUI/covid-vaccine-spotter>

Activities

- Selected for International School for Materials for Energy and Sustainability VIII (ISMES VIII), in Caltech, CA.2019.
- U.S. Clean Energy Education & Empowerment (C3E) Conference attendee and poster presenter, Texas 2019.
- Attended Capacity Building Institute: Increasing the Participation of People with Disabilities in Engineering Research Centers, in Seattle January 2017, representing QESST-ERC.
- Summer instructor for [Astronomy Camp](#), for international high school students and adults at Kitt Peak and Mount Lemmon, 2009-present. Tasks include telescope operation (16", 20", and 60"), imaging, and scientific activities.
- Organizer of [Launching your Career](#), April 2017 and 2016, a STEM Symposium for women undergraduate students. Sixty participants among undergraduates, graduates, and professionals.
- Designed and constructed a solar car for the *North America Solar Challenge 2005* with the University of Arizona Solar Racing Team. In charge of electrical wiring and mechanical construction.
- Outreach Chair for Women in Optics, 2015-2017 (WiO). WiO received the 2016 Excellence in Community Outreach for STEM Diversity Award from Women in Science and Engineering. Multiple collaborations with Women in Science and Engineering and other local outreach organizations.
- Hobbies: Mountain biking, aerial acrobatics, astronomy.

Certification

LEED GA Certified, October 2018-2020

LabView CLAD Certified 2015-2017

Certificate in College Teaching by the University of Arizona, 2015. [Teaching portfolio](#).

Honors/Awards/Grants

Director's Award for Exceptional Performance, NREL August 2020

2020 NREL's MCST Postdoc Publication Award for publication with the most impact: "Model and Validation of Single-Axis Tracking with Bifacial PV," IEEE JPV.

Postdoc of the Quarter FY20 Q4, NREL

Graduate Student Assistant Award, World Conference on Photovoltaic Energy Conversion, June 2018

Student-Faculty Interaction Grant, 2017 and 2016

Outstanding Outreach Award, Quantum Energy and Sustainable Solar Technologies, Spring 2017

Outstanding Graduate Teaching Award, College of Engineering, University of Arizona, Spring 2017

UA Ren Future Leaders Fellowship, 2016

CONACYT Mexico Scholarship for Graduate International Studies, 2014

UTEP Liberal Arts Marshal Student, Spring 2011

UTEP Creative Writing Department's Outstanding Graduate Student, Spring 2011

Monterrey Tec Top 1 Graduate, 2007: Total Young Award

Monterrey Tec Valedictorian, 2007

Monterrey Tec Mechatronics Top 1 Graduate, 2007

Monterrey Tec Cultural Department Top 1 Graduate, 2007