

2025 IEEE Latin American Electron Devices Conference (LAEDC 2025)

**Guadalajara, Mexico
8-10 October 2025**

IEEE Catalog Number:
ISBN:

CFP25T67-POD
979-8-3315-1525-6



Copyright © 2025, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP25T67-POD
ISBN (Print-On-Demand):	979-8-3315-1525-6
ISBN (Online):	979-8-3315-1524-9
ISSN:	2835-3463

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA

Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com

TABLE OF CONTENTS

Ad Astra Project 2024/2025: Implementation of Renewable Energy for Social Development in Vulnerable Communities in El Salvador	1
<i>Estefany Valencia, Bryan Vásquez-Pineda, Cristian Alvarado, Job N. Acosta, Manuel Cardona</i>	
Eye Tracking for the Detection of Neurodegenerative Diseases: A Systematic Review	6
<i>Alisson Jimenez, David Turcios, Manuel Cardona</i>	
Dynamic Modeling of the ALICE Lower Limb Exoskeleton Using Lagrange-Euler Formulation	12
<i>Manuel Cardona, José Varela-Aldás, Fernando E. Serrano</i>	
Advances in Trainable Molecular Algorithms for Biological Computing with DNA	18
<i>Jeniffer Saravia, Bryan Vásquez-Pineda, Manuel Cardona</i>	
Optimizing Compute Express Link for Enhanced Low-Latency Performance	24
<i>Ángel Adán Baltazar-Ortiz, Francisco E. Rangel-Patiño, Omar Longoria-Gandara</i>	
Communication by magnetic fields using copper coils at temperatures below 0°C	28
<i>Carlos Uriel Perez Nava, José Humberto Arroyo Núñez, Ismael Martínez Ramos Daniel Ferrusca Rodríguez</i>	
Optical Power Converters based on SiC for space applications: the RePowerSiC initiative	33
<i>A. García-Loureiro, N. Seoane, J. Fernández-Lozano, P. J. Wellmann, A. Holm Dubre, A. Arora, Haiyan Ou M. Peralta-Fuentes, P. Sanmartín, F. Almonacid, E. F. Fernández</i>	
Design of a Band-Pass Filter for ECG Signal in 180nm CMOS Technology	37
<i>J. P. Leon-Paramo, Frederick Jimenez, L. Saul Sanchez-Glz, J.S. Ramos-Lopez, Martin Gonzalez-Perez F. Sandoval-Ibarra</i>	
BMO 2.0 Rescue Robotic Prototype for Victim Localization in Hostile Terrain	43
<i>Daniela Amaya, Humberto Contreras, Samuel Cuellar, Manuel Cardona</i>	
Broadband GaN Power Amplifier Unit Cell and Power Combining Network	49
<i>Mehdi Babazadeh, Hayden Banting, Carlos E. Saavedra</i>	
Considerations for LDO design	50
<i>Frederick Jimenez, J. P. Leon-Paramo, J. S. Ramos-López, L. Saúl Sánchez-Glz, F. Sandoval-Ibarra</i>	
FPGA-Based Modeling of Gas-Phase Dimethyl Decomposition using Least Squares Kinetic Analysis	54
<i>Daniel Flores Pérez, Cinthia Irías Padilla, Evelina Estrada López, Oscar Ortiz Hernández Diana Velásquez Tinoco</i>	
Monocyte and Lymphocyte Classifier from Blood Smear Digital Images Using K-Means Clustering	60
<i>Nicole Velasco-Molina, Elena Román, Rodrigo Pinto, Manuel Cardona</i>	
TiO ₂ as a potential material for the detection of persistent organophosphate pesticides in soil	66
<i>Jocelyn Olivares-Salazar, Alejandra Castro-Carranza, Orlando Hernandez, Zaira I. Bedolla-Valdez Yunuen Tapia-Torres, Jurgen Gutowski</i>	
Critical Evaluation of Methods for Statistical Circuit Simulation Considering a Bias-Dependent Device Variability	71
<i>Alexander Kloes, Ghader Darbandy, Aristeidis Nikolaou, Nadine Dersch</i>	

gm-Based Gain Boosting: An Alternative to Conventional Techniques	75
<i>J. E. López-Bugarín, F. E. Morales-Garcidueñas, E. Díaz-Marín, J. S. Ramos-López, Frederick Jimenez L. Saúl Sánchez-Gl, J. P. Leon-Paramo, F. Sandoval-Ibarra</i>	
Advances and Challenges in Marine Monitoring Technologies in Latin America: A Systematic Review	79
<i>Bryan Vásquez-Pineda, Estefany Valencia, Julissa Batres, Manuel Cardona</i>	
Emerging Sensor for Sustainable Airborne Pesticide Detection: A Brief Perspective on Oxide Semiconductors	85
<i>Alejandra R. Vences, Alejandra Castro-Carranza, Arón Jazcilevich-Diamant, Iván Y. Hernández-Paniagua</i>	
Setup Time Optimization of a TSPC D Flip-Flop in TSMC 0.18 um CMOS for High-Speed SAR ADC Applications	91
<i>Ivan Martinez-Flores, Jose L. Chavez-Hurtado, Esteban Martinez-Guerrero Cuauhtemoc R. Aguilera-Galicia</i>	
Integration of Nano-Graphite as Dopant in Electron Transport Layers for Organic Solar Cells: Preliminary Results	94
<i>Magaly Ramirez-Como, Monica Montserrath Valdez-Mata, Ian Carlos Flores Contreras Liliana Fernanda Hernandez-Garcia, Lluís F. Marsal, Luis Resendiz</i>	
Does ENOB Matter? On the Effective Number of Bits in Single-Ramp ADCs	98
<i>J. S. Ramos-López, F. Sandoval-Ibarra, Jose M. Rocha-Perez, Frederick Jimenez, L. Saúl Sánchez-Gl J. P. Leon-Paramo, J. E. López-Bugarín, F. E. Morales-Garcidueñas</i>	
Personalizing STEAM Education with AI: The AIBOT Agent of the STEAM Robotics Academy	102
<i>Manuel Cardona, Bryan Vásquez-Pineda, Rubén Torres, Marcela Martínez</i>	
Democratizing Air Quality Monitoring: The Role of Low-Cost PM _{2.5} Sensors in Community Decision- Making	108
<i>A. Castro-Chacon, A. Castro-Carranza, M. Grutter, R. Torres-Jardón</i>	
Accelerating Post-Silicon Debug: An Ensemble Machine Learning and Explainable AI Approach for Platform Boot Failures	114
<i>David Michel-Torres, Eduardo Garcia-Espinosa, Jorge Quinones-Rivera</i>	
Parameterization of Multifractal Generators Using the Process's Autocorrelation Function	118
<i>S. Ruano-Austria Ángel, Israel Villegas Cocone, Alin A. Carsteanu</i>	
STEM education in electronics	123
<i>Abril A García-Soriano, Isai S Hernandez-Luna, Arturo Torres Sanchez, Nicol A Munguía-Fernández Jimena Quintero-Lopez, Leonardo Sanchez-Fernandez, Norberto Hernandez-Como</i>	
AI-Driven Digital Design Prototyping with MBSE for Small-Scale Makers	127
<i>M. Luis Miguel Quevedo, Kishore Kumar Kadari, Wilfrido Alejandro Moreno</i>	
Decision Feedback Equalizer Optimization for PCI Express Gen6	131
<i>Jorge E. Ascencio-Blancarte, Francisco E. Rangel-Patiño, Karla G. López-Araiza Omar Longoria-Gandara</i>	
Interface for Automating the Parameter Extraction Method of AOS-TFTs Using Mathematical Optimization	135
<i>Dante Ángel Gómez Nápoles, Antonio Cerdeira Altuzarra, Arturo Escobosa Echevarría</i>	

Applying a Taylor-Model-Based Characterization for Inspecting the Carrier Mobility Asymmetry in a Graphene FET at Cryogenic Temperatures	139
<i>Xiomara Ribero-Figueroa, Anibal Pacheco-Sanchez, Tzu-Jung Huang, Francisco Pasadas, Ivan Puchades Ismael Martinez-Ramos, Daniel Ferrusca, Reydezel Torres-Torres</i>	
8 bits Analog time-to-digital converter, 100 ps resolution	144
<i>L. Saul Sanchez-Glez, J.P. Leon-Paramo, Frederick Jimenez, Martin Gonzalez-Perez, J.S. Ramos-Lopez F. Sandoval-Ibarra</i>	
Integrate MBSE and SysML 2.0 for Next-Generation Cyber-Resilient Semiconductor Architectures	148
<i>M Luis Miguel Quevedo, Antonio Ruiz, Kishore Kumar Kadari, Wilfrido Alejandro Moreno</i>	
A multi-project wafer initiative for flexible sensors	152
<i>Norberto Hernandez-Como, Isai Hernandez Luna, Arturo Torres Sanchez, Cuauhtemoc Leon Puertos Francisco Hernandez Cuevas</i>	
Extraction of transfeminicide features in Mexico during 2007–2018	156
<i>Alejandro Molina-Villegas, Jonathan Zárate-Cartas, Javiera Donoso-Jiménez</i>	
Harnessing Large Language Models Applications in Smart Manufacturing	161
<i>Bryan Vásquez-Pineda, Manuel Cardona</i>	
An Open-Source Floating-Point Unit IP Core: Design, Verification, and Layout with Sky130	167
<i>J. E. López-Bugarín, Lino R. Gonzalez-Guerra, Jesús Eduardo Esparza Soto, D. A. García-García Susana Ortega-Cisneros, Emilio Isaac Baungarten-Leon</i>	