Dr. Ashis Maity

Assistant Professor, Department of Electrical Engineering,
Indian Institute of Technology (IIT) Kharagpur, West Bengal, India, Pin-721302
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RESEARCH INTERSTS

1. Power Management Integrated Circuits (ICs)
2. Energy Harvesting System Design for Powering Microsystems
3. Analog Interfacing Electronics
4. High-Performance Analog and Mixed Signal Design

EDUCATION

Doctor of Philosophy (PhD), **May 2016**
Advanced VLSI Design Laboratory under Advanced Technology Development Center,
Indian Institute of Technology Kharagpur, Kharagpur, India
Dissertation title: "Design and Analysis of Self-Compensated Low Dropout Regulators"

Master of Science (MS), **May 2009**
Electrical Engineering,
Indian Institute of Technology Kharagpur, Kharagpur, India
Dissertation title: "Design and Implementations of a 20 MHz DC-DC Buck Converter for Portable Applications"

Bachelor of Engineering (BE), **May 2002**
Electronics & Telecommunication Engineering,
Bengal Engineering and Science University, Shibpur, Howrah, India

RELATED RESEARCH/INDUSTRIAL EXPERIENCE

Assistant Professor, **August 2017- Present**
Department of Electrical Engineering,
Indian Institute of Technology (IIT) Kharagpur, West Bengal, India

Visiting Scientist & Visiting Lecturer, **August 2016- July 2017**
Texas Analog Center of Excellence,
The University of Texas at Dallas, Richardson, Texas, USA

Research Consultant **June 2015- July 2016**
Advanced VLSI Design Laboratory,
Indian Institute of Technology Kharagpur, West Bengal, India

Senior Design Engineer, **June 2008- June 2009**
National Semiconductor, Tokyo, Japan

Internship, **October 2007- November 2007**
National Semiconductor, Tokyo, Japan

Internship, **May 2007- July 2007**
National Semiconductor, Tokyo, Japan

Member Design Team, **July 2002- December 2005**
Alliance Semiconductor, Bangalore, India

RELATED TEACHING EXPERIENCE

1. **EE60032: Analog Signal Processing**
   Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur
   Semester: Autumn 2018, Autumn 2019

2. **EE60100: Mixed Signal Circuits and Systems-on-Chip**
   Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur
   Semester: Spring 2019 , Spring 2020

3. **EE21004: Measurements and Electronic Instruments**
   Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur
   Semester: Spring 2018

4. **EECT6379: Energy Harvesting, Storage and Powering for Microsystems,**
   Erik Jonsson School of Engineering and Computer Science, The University of Texas at Dallas, Tx, USA
   Semester: Spring 2017

5. **EE39004: Embedded System Laboratory**
   Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur
   Semester: Spring 2018, Spring 2019, Spring 2020

6. **EE29001: Signals and Networks Laboratory**
   Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur
   Semester: Autumn 2018, Autumn 2019

7. **EE29004: Measurements and Elctronic Instruments Laboratory**
   Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur
   Semester: Spring 2020

PUBLICATIONS

International Journals

1. Bumkil Lee, Min Kyu Song, **Ashis Maity,** and D. Brian Ma, "A 25-MHz Four-Phase SAW Hysteretic Control DC-DC Converter With 1-Cycle Active Phase Count ", *IEEE Journal of Solid-State Circuits,* **vol. 54, no. 6, pp. 1755-1763, June 2019.**
2. **Ashis Maity** and Amit Patra, "A Hybrid Mode Operational Trans-conductance Amplifier for an Adaptively Biased Low Dropout Regulator" *IEEE Transactions on Power Electronics,* **vol. 32, no. 2, pp. 1245-1254, Feb. 2017.**
3. **Ashis Maity** and Amit Patra, "Analysis, Design and Performance Evaluation of a Dynamically Slew Enhanced Adaptively Biased Capacitor-less Low Dropout Regulator" *IEEE Transactions on Power Electronics*, **vol. 31, no. 10, pp. 7016-7028, Oct. 2016**.
4. **Ashis Maity** and Amit Patra, "A Single Stage Low Dropout Regulator With a Wide Dynamic Range for Generic Applications" *IEEE Transactions on Very Large Scale Integration (VLSI) Systems* **vol. 24, no. 6, pp. 2117-2127, June 2016.**
5. **Ashis Maity** and Amit Patra, "Design and Analysis of an Adaptively Biased Low-Dropout Regulator Using Enhanced Current Mirror Buffer", *IEEE Transactions on Power Electronics*, **vol.31, no.3, pp.2324-2336, March 2016**.
6. **Ashis Maity** and Amit Patra, "Trade-offs Aware Design Procedure for an Adaptively Biased, Capacitor-less Low Drop-out Regulator Using Nested Miller Compensation," *IEEE Transactions on Power Electronics*, **vol.31, no.1, pp.369-380, Jan. 2016**.
7. **Ashis Maity** and Amit Patra, "Dynamic Slew Enhancement Technique for Improving Transient Response in an Adaptively Biased Low Drop-Out Regulator," *IEEE Transactions on Circuits and Systems II: Express Briefs*, **Vol.62, no.7, pp.626-630, July 2015.**
8. **Ashis Maity**, Norihisa Yamamura, Jonathan Knight, Amit Patra, "High Gain, Wide Band Error Amplifier Topology for DC-DC Buck Converter Switching at 20MHz", *Electronics Letters* **Vol. 44, No. 11, Pages 655-656** (2008).

9. **Ashis Maity**, R. G. Raghavendra, Pradip Mandal, "Design of a low power voltage regulator for high dynamic range of load current", *International Journal of Electronics* **Volume 94, Issue 8, pages 743 - 757** (2007).

International Conferences

1. Rohit Chaudhari, and **Ashis Maity**,"Auto-Tuned Transition Scheme in Bias-Flip Rectifier for Piezoelectric Energy Harvesting ", *IEEE 62nd International Midwest Symposium on Circuits and Systems (MWSCAS)*, Dallas, Texas USA, August 4-7, 2019, pp. 382-385.
2. Siddharth Agarwal, and **Ashis Maity**,"A 10-MHz Current-Mode Fixed-Frequency Hysteretic Controlled DC-DC Converter with Fast Transient Response ", *IEEE 62nd International Midwest Symposium on Circuits and Systems (MWSCAS)*, Dallas, Texas USA, August 4-7, 2019, pp. 945-948.
3. Shubham Negi, **Ashis Maity,** Amit Patra, and Mrigank Sharad "Adaptive Fractional Open Circuit Voltage Method for Maximum Power Point Tracking in a Photovoltaic Panel ", *32nd International Conference on VLSI Design and 18th International Conference on Embedded Systems (VLSID),* Delhi, NCR, India, 2019, pp. 482-487
4. Tapabrata Sen, **Ashis Maity,** and Siddhartha Sen, "On-Chip Implementation of Analog Linearization Schemes for Giant-Magnetoresistance Sensors ", *12th International Conference on Sensing Technology (ICST)*, Limerick, Ireland, 2018, pp. 419-423
5. Bumkil Lee, Min Kyu Song, **Ashis Maity,** and D. Brian Ma, "A 25MHz 4-Phase SAW Hysteretic DC-DC Converter with 1-Cycle APC Achieving 190ns t_{settle} to 4A Load Transient and Above 80% Efficiency in 96.7% of the Power Range" *International Solid-State Circuits Conference* ***(ISSCC)****,* San Francisco, CA, 2017, pp. 190-191
6. N.J.M.S. Mary, **Ashis Maity**, and Amit Patra, "Light Load Efficiency Improvement in High Frequency DC-DC Buck Converter Using Dynamic Width Segmentation of Power MOSFET," *27th International Conference on VLSI Design and 13th International Conference on Embedded Systems*, Mumbai, 2014, pp. 563-568
7. Cheekala Lovaraju, **Ashis Maity** and Amit Patra, "A Capacitor-less Low Drop-out (LDO) Regulator with Improved Transient Response for System-on- Chip Applications", *26th International Conference on VLSI Design and 12th International Conference on Embedded Systems*, Pune, 2013, pp. 130-135.
8. Debajit Bhattacharya, **Ashis Maity** and Amit Patra, "Design and Implementation of a High-Speed, Power-Efficient, Modified Hybrid-Mode Sense Amplifier for SRAM Applications" *26th International Conference on VLSI Design and 12th International Conference on Embedded Systems*, Pune, 2013, pp. 209-214.
9. Soumik Sarkar, **Ashis Maity** and Amit Patra, "Design of an Ultra-Low Powered DC-DC Buck Converter for Wireless Sensor Networks", *Asia Pacific Conference on Postgraduate Research in Microelectronics and Electronics*, Hyderabad, 2012, pp. 126-131.
10. **Ashis Maity**, Amit Patra, Norihisa Yamamura, Jonathan Knight, "Design of a 20 MHz DC-DC Buck Converter with 84% Efficiency for Portable Applications", *24th International Conference on VLSI Design and 10th International Conference on Embedded Systems Design,* Chennai, 2011, pp. 316-321.
11. **Ashis Maity**, R. G. Raghavendra, Pradip Mandal, "On-chip Voltage Regulator with Improved Transient Response", *18th International Conference on VLSI Design and 4th International Conference on Embedded Systems Design*, Kolkata, 2005, pp. 522-527.

PATENTS (APPLIED)

1. **Ashis Maity,** and Amit Patra, "Dynamically Biased Amplifier Circuit and Methods for Improving its Dynamic Range", *Indian Patent Application* **564/KOL/2013** (2013)
2. **Ashis Maity,** and Amit Patra, "An Adaptively Biased Self-compensated, Unconditionally Stable, Area Efficient LDO Topology", *Indian Patent Application* **111/KOL/2012** (2012)
3. Amit Patra, Pradipta Patra, Syed Asif Eqbal, **Ashis Maity**, "A Bi-Directional Multiple-Input Single-Inductor Multiple-Output Switcher with Buck/Boost/Inverted Outputs", *Indian Patent Application* **1328/KOL/2010** (2010)

AWARDS

- Winner of IESA Techno Inventor Award (Best Thesis Award in Ph.D. Category) in India Electronics & Semiconductor Association (IESA) Vision Summit 2017 — 2017
- Winner as Best Entry in PhD Forum in 29th International Conference on VLSI Design and 15th International Conference on Embedded Systems — 2016
- Runners up award in Cadence Design Contest-India — 2012

- Second Prize Winner in Poster Presentation in Research Scholar Day 2012
- First place award in Cadence Design Contest-India 2011
- One of the finalist (top 9) in Cadence Design Contest-India 2008
- Scholarship by MHRD, Govt. of India July 2009- July 2013

MEMBER of PROFESSIONAL BODIES

- Member: IEEE

PERSONAL INFORMATIONS

- **Date of birth: 1st April 1979, Gender: Male**