Lydia Lee

Albuquerque, NM | lalee@sandia.gov

EDUCATION

University of California, Berkeley | Electrical Engineering and Computer Sciences
PhD | Su23 | 3.7/4.0

University of California, Berkeley | Electrical Engineering and Computer Sciences
B.S. | Sp17 | 3.7/4.0

SKILLS

Languages:

- Python
- Verilog + systemVerilog
- Matlab
- C, Java
- English: native speaker

Software/Tools:

- Cadence Virtuoso
- Synopsys DC + ICC + Formality
- BAG2 + 3.0 + 3.1
- semiconductor processing + fabrication

PUBLICATIONS

L. Lee, R. Abiad, R. Livi, M. Mirkovic, K. Hatch, H. Brunner, D. Larson, K. Pister, "A Constant Fraction Discriminator with Shape-Agnostic Fraction Triggering and Sub-ns Walk for the Solar Probe Analyzer for Ions," *IEEE Sensors*, 2023. (link)

A. Alvara, **L. Lee**, E. Sin, N. Lambert, A. Westphal, K. Pister, "BLISS: Interplanetary exploration with swarms of low-cost spacecraft," *Acta Astronautica*, 2024. (link)

T. Yuan, F. Maksimovic, B. Wheeler, D. Burnett, **L. Lee**, T. Watteyne, K. Pister, "A Temperature-Compensated BLE Beacon and 802.15.4-to-BLE Translator on a Crystal-Free Mote," *EuMW*, 2021. (link)

N. Lambert, F. Toddywala, B. Liao, E. Zhu, **L. Lee**, K. Pister, "Learning for Microrobot Exploration: Model-based Locomotion, Sparse-robust Navigation, and Low-power Deep Classification," *MARSS*, 2020. (link)

T. Yuan, F. Maksimovic, D. Burnett, B. Wheeler, **L. Lee**, K. Pister, "Temperature Calibration on a Crystal-Free Mote," *WF-IoT*, 2020. (link)

T. Chang, T. Watteyne, B. Wheeler, F. Maksimovic, O. Khan, S. Mesri, **L. Lee**, I. Suciu, D. Burnett, X. Vilajosana, K. Pister, "6TiSCH on SCuM: Running a Synchronized Protocol Stack without Crystals," *Sensors*, vol. 2, no. 7, p. 1912, 2020. (link)

D. Burnett, H. Fahad, **L. Lee**, F. Maksimovic, B. Wheeler, O. Khan, A. Javey, K. Pister, "Two-Chip Wireless H_2S Gas Sensor System Requiring Zero Additional Electronic Components," *Transducers*, 2019. (link)

F. Maksimovic, B. Wheeler, D. Burnett, O. Khan, S. Mesri, I. Suciu, **L. Lee**, A. Moreno, A. Sundararajan, B. Zhou, R. Zoll, A. Ng, T. Chang, X. Villajosana, T. Watteyne, A. Niknejad, K. Pister, "A Crystal-Free Single-Chip Micro Mote with Integrated 802.15.4 Compatible Transceiver, sub-mW BLE Compatible Beacon Transmitter, and Cortex M0," *VLSI*, 2019. (link)

D. Burnett, B. Wheeler, **L. Lee**, F. Maksimovic, A. Sundararajan, O. Khan, K. Pister, "CMOS oscillators to satisfy 802.15.4 and bluetooth LE PHY specifications without a crystal reference," *CCWC*, 2019. (link)

A. Moreno, F. Maksimovic, **L. Lee**, B. Kilberg, C. Schindler, H. Gomez, D. Teal, D. Acker-James, A. Fearing, K. Pister, J.S. Rentmeister, J. Stauth, "Single-Chip micro-Mote for Microrobotic Platforms," *GOMACTech*, 2019. (link)

WORK EXPERIENCE

Sandia National Laboratories | Principal Member of Technical Staff
08/2023 – Present | Anthony Colombo | Albuquerque, NM

Autonomous Microsystems Lab | Graduate Student Researcher
08/2017 – 08/2023 | Kristofer Pister | Berkeley, CA

Apple | Intern
05/2022 – 09/2022 | Tim Stroud | Austin, TX
- Developed PLL modeling toolset for architecture exploration and design verification
- Architecture exploration and design for a diagnostic ADC

Blue Cheetah Analog Design | Design Intern
06/2020 – 09/2020 | Elad Alon | San Francisco, CA
- Developed mixed signal circuit generators for DDR PHY using the Berkeley Analog Generator

Texas Instruments | Analog Design Intern
05/2017 – 08/2017 | Abidur Rahman | Dallas, TX
- Designed and taped out several iterations of a current limiting circuit for power mux applications

Texas Instruments | Analog Design Intern
05/2016 – 08/2016 | Abidur Rahman | Dallas, TX
- Designed a current limiting circuit intended for driver and load switch use
- Isolated current bottlenecks in power FETs to alter process to improve device performance
- Compared silicon data to model results to identify model holes and datasheet parameter limits

PROJECTS

Solar Probe Analyzer for Ions (SPAN-Ion) | Berkeley Space Sciences Laboratory
08/2020 – 08/2023 | Roberto Livi, Davin Larson | Berkeley, CA
- Designed and tested a pulse timing discriminator ASIC for the SPAN-Ion instrument to measure the mass-charge ratio of ions which compose the solar wind
- Taped out a second chip for improved timing walk and jitter

SCM Lighthouse Localization | Autonomous Microsystems Lab
08/2019 – Present | Kristofer Pister | Berkeley, CA
- Designed and currently testing sensor front-end for outside-in localization with Lighthouse V1 and V2 base stations
- Same hardware is co-opted for contactless programming of the Single-Chip Mote (SCM)

Single-Chip Mote | Autonomous Microsystems Lab
08/2017 – 01/2020 | Kristofer Pister | Berkeley, CA
- Project aims to integrate a microprocessor, radio, sensors, and energy harvesting onto a single die, sans external components (TSMC 65nm LP)
- Co-designed and tested external sensor interface, temperature sensor, and supply monitor
- Designed voltage regulators for microprocessor and auxiliary digital
- V3B & V3C: Managed full-system digital verification and synthesis/PAR

AWARDS

Spring 2023	Chair's Graduate Award
Fall 2019	Outstanding GSI Award
Fall 2017	Department Gold Fellowship
2015	Maxim Integrated Women in Engineering Scholarship
2014	Chevron Scholarship

TEACHING

EE140/240A | Analog Integrated Circuits
Teaching Assistant | Fa19, Sp20

CS Mentors | EE16A
Senior Mentor | Sp19 – Fa19

Bay Area Scientists In Schools | Squishy Circuits, E&M, Robotics
Instructor | Sp18 – Sp23

EE16A | Designing Information Devices and Systems I
Teaching Assistant | Sp16, Fa16, Sp17, Fa18

EE16A | Designing Information Devices and Systems I
Reader | Fa15