

Barbaros Aslan, Ph.D., CFEI
Senior Associate

Professional Profile

Dr. Barbaros Aslan is a Senior Associate in Exponent's Electrical Engineering and Computer Science practice. He specializes in issues pertaining to electrical and electronic engineering, especially as they relate to semiconductor devices, RF/Microwave/THz electronics, and micro/nanofabrication. He has extensive experience with fabrication equipment and high-frequency characterization and simulation tools, along with related experience in software/algorithm development. His expertise further extends into wireless systems/communications (cellular, RFID and radar), as well as integrated-circuit packaging and power transmission/distribution.

Dr. Aslan received his Ph.D. in Electrical Engineering from Cornell University, where his research focused on the development of a new nanoscale solid-state electronic device for generating THz radiation. His work included thermal/electrical modeling and simulation, fabrication/process development, and characterization. He also gained significant experience in ohmic contacts, thermal management, and coupled device-circuit simulations at the high-field transport level.

Prior to his graduate studies at Cornell, he worked for defense contractors: Herley Industries Inc. and Anaren Microwave Inc. At Herley, he designed, simulated (at electromagnetic and circuit levels), and characterized broadband microwave low-noise amplifiers (LNA). Subsequently, he was awarded an academic grant by Herley to develop in-house software to implement his novel method that predicts high-frequency transistor performance for a given set of LNA specifications. At Anaren, he was involved in the optimization of passive high-frequency components using three-dimensional electromagnetic simulators and also developed software modules to analyze and extract information from measured S-parameter data collected from these parts.

Dr. Aslan also has broad teaching experience, taught courses in Microwave Engineering/Measurements and Microelectronics. Dr. Aslan served as an Academic Excellence Workshop coordinator for a year in the ECE department at Syracuse University.

Academic Credentials and Professional Honors

Ph.D., Electrical Engineering, Cornell University, 2009
M.S., Electrical Engineering, Syracuse University, 2005
B.S., Electrical Engineering, Istanbul University, Turkey, 2001

Lester Eastman Fellowship at Cornell University, 2006–2007

Licenses and Certifications

Certified Fire and Explosion Investigator (CFEI), National Association of Fire Investigators

Languages

Turkish, Native Speaker

Publications

Aslan B, Eastman LF. A THz-range planar NDR device utilizing ballistic electron acceleration in GaN. *Solid-State Electronics* 2011 Oct; 64(1):57–62.

Aslan B, Eastman LF, Diduck Q. Simulation and experimental results on GaN based ultra-short planar negative differential conductivity diodes for THz power generation. *International Journal of High Speed Electronics and Systems* 2009; 19(1):1–6.

Dyson A, Ridley BK, Aslan B, Cha HY, Chen X, Schaff WJ, Spencer MG, Eastman LF. GaN ballistic negative-differential-conductivity diode for potential THz applications. *Physica Status Solidi A* 2007; 4(2):528–530.

Aslan B, Eastman LF, Schaff WJ, Chen X, Spencer MG, Cha HY, Dyson A, Ridley BK. Ballistic electron acceleration negative-differential-conductivity devices. *International Journal of High Speed Electronics and Systems* 2007; 17(1):173–176.

Presentations

Aslan B, Eastman LF. GaN based NDR diodes for electronic THz generation. Invited Talk, Bell Laboratories, Murray Hill, NJ, October 2008.

Aslan B, Eastman LF. Submicron vertical GaN NDR diodes for THz applications. Oral Presentation, WOCSEMMAD 2008, Palm Springs, CA, February 2008.

Aslan B, Eastman LF. Ballistic electron acceleration negative differential conductivity diodes. Oral Presentation, WOCSEMMAD 2007, Savannah, GA, February 2007.

Aslan B, Chen X, Eastman LF, Schaff W, Ridley BK, Spencer MG, Cha HY. GaN-AlGaIn negative differential conductivity diodes for potential THz applications. Poster Presentation, CNF 30th Year Celebrations, Ithaca, NY, June 2007.

Aslan B, Chen X, Eastman LF, Schaff W, Ridley BK, Spencer MG, Cha HY. Ballistic electron acceleration negative differential conductivity diodes. Oral Presentation, Cornell Electron Device Society Meeting, Ithaca, NY, October 2006.

Aslan B, Chen X, Eastman LF, Schaff W, Spencer MG, Cha HY. Ballistic electron acceleration negative differential conductivity diodes. Oral Presentation, Lester Eastman Conference (LEC) 2006, Ithaca, NY, August 2006.

Aslan B, Chen X, Eastman LF, Schaff W, Spencer MG, Cha HY. Ballistic electron acceleration negative differential conductivity diodes. Poster Presentation, CNF Annual Meeting, Ithaca, NY, September 2005.

Prior Experience

Engineering Intern, Herley MDI, Inc., 2003
Engineering Intern, Anaren Microwave, Inc., 2002

Academic Appointment

- Adjunct Faculty, Polytechnic Institute of New York University, 2010

Project Experience

Electrical/Thermal Modeling and Simulation

- Performed radiofrequency (RF) system design verification of a radar system. Work included surveying available RF components and statistical analysis on system noise, dynamic range, and gain.
- Modeled the radar cross-section of a large-scale utility installation to evaluate its impact on the sensitivity of a nearby radar facility.
- Investigated and modeled claimed induced heating of a high-power RF Wi-Fi antenna on a mobile device.
- Designed magnetic circuits for field-testing the effects of direct current magnetic fields on aquatic wildlife.
- Modeled electric and magnetic fields and audible noise associated with power lines.
- Modeled and simulated the distortion of an AM radio signal in the presence of a large industrial installation.

Failure Analysis of Electronics and Consumer Products

- Performed failure analysis of the components of a medical drug delivery device.
- Investigated the root cause of printed circuit board (PCB) failures in a consumer medical device.
- Assisted with software failure analysis of automotive electronics.

Litigation Support

- Evaluated and performed prior art and infringement analysis on intellectual property litigation cases involving non-volatile flash memory products.
- Performed infringement analysis and reverse engineering on computer memory modules.
- Performed forensic photogrammetry analysis of digital images to compare to the claims in an alleged incident.
- Performed patent infringement analysis related to architecture, protocols, and functionalities of financial service networks and terminals.

Health, Safety and Medical Products

- Assisted in a number of compliance assessments per 47CFR1.1307, 47CFR1.1310, IEEE C95.1, IEEE C95.6, IEC 60601-1-2, IEC 60479-1, ICNIRP 1998, ICNIRP 2010, and other RF and electrical health and safety standards.

Professional Affiliations

- IEEE