

Mehdi Saremi

Department of Electrical and Computer Engineering
University of Tehran
Tehran, IRAN

Phone: +98-9385051848

E-mail: mehdi.saremi@gmail.com
m.saremi@ece.ut.ac.ir

Homepage: <http://nanolab.ut.ac.ir/CM/Saremi.htm>

Address: No. 12, Behyari St., Motahari Ave., Khorram Abad, Iran

EDUCATION

▪ University of Tehran Tehran

M.Sc., Semiconductor Devices, Electronics, Electrical and Computer Engineering.

Thesis: Modeling of Speed and Power Consumption Variations in Nanotechnology (score: 19.3/20 (4/4))

Advisor: Prof. Ali Afzali-Kusha

GPA: 18.51/20 (3.91/4) (The second rank)

▪ Iran University of Science and Technology (IUST)

B.Sc., Electronics, Electrical Engineering.

Thesis: Design and Manufacture of Amplifier of EMG Signals (score: 20/20 (4/4))

Advisor: Prof. Ahmad Ayatollahi

GPA: 15.17/20 (3.03/4)

Major GPA: 16.39/20 (3.34/4)

▪ Fall 2000 – May 2001 NODET* Pre-University institute Khorram Abad, Iran

Pre-University Certificate in Mathematics and Physics.

GPA: 19.95/20 (The first rank)

* NODET: National Organization for Development of Exceptional Talents.

Research Interests

My research interests lie in the area of modeling of speed and power consumption variations in nanotechnology. Some of my major research interests are:

- Design and optimization techniques to reduce variation in nano-scale era.
- Low-power, high-performance devices.
- Propose novel devices to decrease the device variations.
- Modeling of Device Variations.
- Quantum-Mechanical Effects in Nano-devices.
- Modeling of new devices in nano-technology for example FinFET, Strain-Silicon.
- Using of Monte-Carlo simulation for modeling of Device Variations in Nano-scale.

I am currently working on proposing the novel structure in high power and high frequency (HPHF) transistors to increase breakdown voltage.

Publications

Journal Submissions

1. **Mehdi Saremi**, Ali Afzali-Kusha, and Saeed Mohammadi, "Ground Plane FinFET: A FinFET for Low Leakage Power Circuits and Study of its' Process Variation ", is submitted to *The Japanese Journal of Applied Physics*.
2. **Mehdi Saremi**, Ali Afzali-Kusha, and Saeed Mohammadi, "A New Partial-SOI LDMOSFET with Triangle Buried-Oxide for Breakdown Voltage Improvement ", in preparation.

Conference Papers

3. **Mehdi Saremi**, Behzad Ebrahimi, Ali Afzali-Kusha, Mohammad Saremi " Process Variation Study of Ground Plane SOI MOSFET", in *Proc. 2nd Asia Symposium on Quality Electronic Design (ASQED) 2010*.
4. **Mehdi Saremi**, Behzad Ebrahimi, Ali Afzali-Kusha, "Ground Plane SOI MOSFET Based SRAM with Consideration of Process Variation", in *Proc. 2010 International Conference on Electron Devices & Solid-State Circuits (EDSSC)*.

Research Experiences

Oct. 2006 – Present University of Tehran

Research Assistant, *Low-Power, High-Performance, Nano-Systems Laboratory*

<http://nanolab.ut.ac.ir>

- Modeling of new devices in nano-technology for example FinFET, Strain-Silicon.
- Implement of new-devices in SRAM-cells.
- Study of concept ground-plane.
- Simulating new devices by Sentaurus-device and comparing results of them.
- Studying process variations of channel-length, thin-film silicon, and oxide thickness in different structures.
- MOSFET C-V Modeling.
- Comparing different proposed low-power logic styles.
- Advanced MOSFET I-V Modeling.
- 3-D simulation of Bulk-FinFET and SOI-FinFET structures.
- Propose novel devices for low power, high performance and lower variation.

Teaching Experiences

- 2006-2010 Professor Assistant of General Mathematics 1 & 2, Engineering Mathematics, Differential Equations, Electrical Circuit 1 & 2, Electronics 1, 2 & 3, Linear control.
- 2005-2007 Professor Assistant of Electronics 1 & 2.
- 2000-2006 Teaching Mathematics for the NODET high school students of Khorram Abad.

M.Sc. Courses

- Semiconductor-Devices by Dr. Fathipor (18.5/20).
- Quantum-Mechanics by Dr. Soleimani & Dr. Mohajerzadeh (18.5/20).
- Optoelectronics by Dr. Afzali-Kusha (18.5/20).
- Low-Power Integrated Circuit Design by Dr. Afzali-Kusha (18.5/20).
- Solid-State by Dr. Soleimani (17.75/20).

- Quantum-Optics by Dr. Sadeghi (15.4/20).
- SOI Circuits and Devices and Thin-Film Devices by Dr. Forouzandeh & Dr. Mohajerzadeh (19.5/20).
- Nano-Devices and Their Integration by Dr. Afzali-Kusha (19.5/20).

Course Projects

- FinFET I-V Modeling and comparison of SOI-FinFET and Bulk-FinFET.
- Introduce of Self-Aligned II-Shaped Source/Drain and Ground Planed Ultrathin SOI MOSFETs.
- Gate Leakage Current Reduction/Modeling.
- An Accurate Enhanced CAD Model for Gate Leakage Current in Heterostructure Field Effect Transistors.
- Applicability Limits of Two-Frequency C-V Correction Technique Using Five-Element Circuit Model for High-k Gate Dielectric and Ultrathin Oxide.
- Quantum-well to Quantum-dot tunneling.
- Study of crystal lattices types.
- Analysis of the Linewidth-Enhancement Factor of Long-Wavelength Tunnel-Injection Quantum-Dot Lasers.
- Simulating Quantum Transport in Nanoscale Transistors: Real versus Mode-Space Approaches.

Honors

- Ranked **2nd** among M.Sc students of the Semiconductor-Device/Electronics engineering of the University of Tehran, class of 2008.
- Ranked **147th** in the nationwide university entrance exam for graduate studies in 2007.
- Ranked **304th** among more than 450000 students in the nationwide university entrance exam in 2003
- Ranked **1st** in the Nation-wide final pre-university exams in the city of Khorram Abad in 2003.
- Ranked **1st** in the Nation-wide final high school exams in the city of Khorram Abad in 2002.

Computer Skills

Programming: MATLAB, Simulink, Pascal, Basic, 8085/8086/8051,

CAD Tools: Sentaurus-device, Inspect, Tecplot, Sentaurus-structure editor, HSPICE, PSPICE, ORCAD.

Operating Systems and Microsoft Office: Windows, MS-DOS, Word, Power Point, Excel, Front Page

Language Proficiency

TOEFL (PBT): 590, TWE: 3.5/6, Reading: 590, Listening: 560, Structure: 620

GRE General Test: 1080, Quantitative: 760, Verbal: 320, Analytical Writing: 2.5

References

- Prof. Ali Afzali-Kusha: *Professor*, University of Tehran, afzali@ut.ac.ir
- Prof. A. Ayatollahi: *Associate Professor*, Iran University of Science and Technology (IUST), ayatollahi@iust.ac.ir
- Prof. B. Forouzandeh: *Associate Professor*, University of Tehran, bforooz@ut.ac.ir
- Prof. S. Mohajerzadeh: *Professor* University of Tehran, mohajer@ut.ac.ir
- Prof. E. Asl-Soleimani: *Professor* University of Tehran, soleimni@ut.ac.ir