

# MOHAMMAD MAHDI KHATAMI

**Gender and date of birth:** Male | 23 April 1989

**Address:** Department of Electrical and Computer Engineering, Tarbiat Modares University, Tehran, Iran

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## EDUCATION

- 2014-Now** PhD candidate in Optoelectronics Engineering  
Tarbiat Modares University, Tehran, Iran  
Thesis: "Study of phonon scattering in 2D materials"  
Supervisor: Prof. Dr. Mohammad Kazem Moravvej-Farshi  
Co-advisor: Dr. Mahdi Pourfath  
GPA: 17.88/20
- 2011-2014** Master of Science in Electrical Engineering  
Amirkabir University of Technology, Tehran, Iran  
Thesis: "Simulation, analysis and improve characteristics of a SiGe FET"  
First supervisor: Dr. Majid Shalchian  
Second supervisor: Dr. Saeid Khatami  
Co-advisor: Dr. Mohammad Reza Kolahdouz Esfahani  
GPA:18.51/20

## RESEARCH INTERESTS

2D materials, DFT calculations, Electrical transport, Electron-phonon interaction, Strain, Solar cells, ...

## WORK EXPERIENCES

- **2018-2019:** Visiting Researcher in the group of Dr. William Vandenberghe, Department of Materials Science and Engineering, The University of Texas at Dallas, Richardson, TX
  - Research Field: Electrical transport in 2D materials (e.g. graphene, silicene, and germanene)

## PUBLICATIONS

- Mohammad Mahdi Khatami, Gautam Gaddemane, Maarten L. Van de Put, Massimo V. Fischetti, Mohammad Kazem Moravvej-Farshi, Mahdi Pourfath, and William G. Vandenberghe, "Electronic Transport Properties of Silicene Determined from First Principles", *Materials*, Vol. 12, pp. 2935, 2019, <https://www.mdpi.com/1996-1944/12/18/2935>
- M. V. Fischetti, P. D. Yoder, M. M. Khatami, G. Gaddemane, and M. L. Van de Put, "Hot electrons in Si lose energy mostly to optical phonons": Truth or myth?", *Appl. Phys. Lett.*, Vol. 114, pp. 222104, 2019, <https://doi.org/10.1063/1.5099914>.

- Mohammad Mahdi Khatami, Gautam Gaddemane, Maarten L. Van de Put, Massimo V. Fischetti, Mohammad Kazem Moravvej-Farshi, Mahdi Pourfath, and William G. Vandenberghe, "First-principles Study of the Electron and Hole Mobility in Silicane", *77<sup>th</sup> Device Research Conference (2019)*, Ann Arbor, MI.
- Mohammad Mahdi Khatami, Majid Shalchian, Mohammadreza Kolahehdouz, "Impacts of virtual substrate doping on high frequency characteristics of biaxially strained Si PMOSFET", *Superlattices and Microstructures*, vol. 85, pp. 82–91, 2015, <http://dx.doi.org/10.1016/j.spmi.2015.05.012>.
- Mohammad Mahdi Khatami, Majid Shalchian, Mohammadreza Kolahehdouz, "Analysis and improvement of off-state current in biaxially strained Si nano p-MOSFET by virtual substrate's doping control", *Journal of Iranian Association of Electrical and Electronics*, Vol. 13, No. 4, pp. 41-50, 2017.
- Mohammad Mahdi Khatami, Majid Shalchian, Mohammadreza Kolahehdouz, "A symmetric CMOS inverter using biaxially strained Si nano PMOSFET", *23rd Iranian Conference on Electrical engineering, (ICEE2015)*, Tehran, Iran.
- Mohammad Mahdi Khatami, Majid Shalchian, Mohammadreza Kolahehdouz, "Reducing parasitic capacitance of strained Si nano p-MOSFET by control of virtual substrate doping", *5th International Congress on Nanoscience & Nanotechnology (ICNN2014)*, Tehran, Iran.
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#### EDUCATIONAL WORK EXPERIENCES

- **2017-2018:** Teaching assistant: Theory and technology of semiconducting devices, Tarbiat Modares University
- **2016-2017:** Research assistant of Prof. Dr. Mohammad Kazem Moravvej-Farshi, Tarbiat Modares University
- **2014-2016:** Teaching assistant: Solid state devices, Amirkabir University
- **2015:** Project teaching assistant: Solid state electronics, University of Tehran
- **2009-2011:** Teaching assistant: Electronics I and II ,University of Zanjan
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#### HONORS

- 2016-2017** Scientific grant of Iran's National Elites Foundation (INEF)
- 2011- 2014** Selected as exceptional talent during M.Sc. Program in Amirkabir University of Technology
- 2008-2011** Selected as exceptional talent during B.Sc. Program in Zanjan University

#### SKILLS

- Programming languages:** Python, Matlab, C, Fortran
- Scientific software and languages:** QUANTUM ESPRESSO, EPW, SIESTA, VASP, Silvaco Tcad (Atlas, Athena), HSPICE
- Public software:** Windows, Linux