

Jamal Mohammad Khani

Curriculum Vitae

PERSONAL INFORMATION

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EDUCATION

2017–2021 **B.Sc. in Physics**, *The University of Zanjan*, Zanjan, Iran
GPA 18.08/20 (3.82/4)
(136 Credits)
2013–2017 **High school diploma in Physics and Mathematics**, *NODET (National Organization for Development of Exceptional Talents)*, Qazvin, Iran

RESEARCH EXPERIENCE

2017-2021 **Honeycomb permanent magnetic lattice for ultracold atoms**, *B.Sc. Project*
Supervisor Dr. Saeed Ghanbari
Description Using analytical expressions and numerical calculations, we showed that periodic arrays of magnetic films can produce honeycomb magnetic lattices with non-zero potential minima for trapping, controlling and manipulating ultracold atoms and Bose-Einstein condensates.

2020-2021 **Switching the bright soliton to the dark soliton via Mach-Zehnder modulator**
Supervisor Prof. Mohammad Mahmoudi
Description We introduced a setup to simulate the generation and control of dark soliton, where switching occurs by bias and modulation voltages in the Mach-Zehnder Modulator Absorption-Phase (MZMAP). Also, the effect of system parameters on the switching performance is investigated.

2019-2020 **Quantum probability vs classical probability**
Supervisor Dr. Saeed Ghanbari
Description We designed a game using the unity engine to represent the quantum probability concepts in an understandable way for everyone.

2018-2019 **Meat fraud detection with hyperspectral imaging**
Supervisor Dr. Ahmad Darudi
Description In a team project, we tried to detect kinds of fraud in meat which was a great problem in our country Iran, using image processing techniques.

2018-2019 **Hofstadter butterfly effect**
Supervisor Dr. Mir Vahid Hosseini
Description We have plotted Hofstadter's butterfly effect graphs with MATLAB.

RESEARCH INTERESTS

Quantum cryptography
Quantum information processing
Quantum computation
Ultracold atoms
Topological insulator

WORK EXPERIENCE

- 2018–Present **IT manager**, LIGHT GUIDE IN LUND AB
◦ CEO: Dr. Ahmad Darudi
- 2020–2021 **Programmer and researcher**, IRAN'S NATIONAL ELITES FOUNDATION (AHMADI ROSHAN PROJECT)
◦ Head of the project: Dr. Ahmad Darudi
- Fall 2019 **Teacher assistant, General Physics I (Introduction to classical mechanics' concepts)**, DEPARTMENT OF ENGINEERING, UNIVERSITY OF ZANJAN
◦ Dr. Saeed Ghanbari
- Fall 2018– Fall 2019 **Research assistant**, DEPARTMENT OF PHYSICS, UNIVERSITY OF ZANJAN
◦ Dr. Saeed Ghanbari
- 2019–2021 **President of the physics student scientific association**, DEPARTMENT OF PHYSICS, UNIVERSITY OF ZANJAN
Held conferences, seminars and workshops
- 2017–2019 **Physics and Mathematics teacher**, INSTITUTE OF HAFEZE DANESHYAR
For high school students
- 2016–2017 **Co-Founder and chairman of the board**, SKEUZ COMPANY
Knowledge enterprise company

HONORS AND AWARDS

- 2021 **Ranked within the top 3 of my graduating class**
- 2020 **Received Iran's National Elites Foundation Scholarship and selected to work in the Ahmadi Roshan project**
This scholarship is just given to students who have a GPA of 17/20 or higher, also have the required skills to work in the real projects
- 2017 **Invited to annual investment meeting as the only representative of Iran**
For presenting Micro Smart ECG device which we made for detecting heart attacks
- 2017 **Top 10 of falling walls lab pitch competition in Amirkabir University of Technology**
For representing Micro Smart ECG device
- 2016 **1st place in provincial Kharazmi awards**
For designing and making the MSECG (Micro and Smart Electrocardiograph) device
- 2016 **1st place in 2nd exhibition of achievements of science and technology**
For designing and making the MSECG (Micro and Smart Electrocardiograph) device

- 2015 **Received National Organization for Development of Exceptional Talents (NODET) scholarship to work on Kharazmi project**
For the idea of making the MSECG (Micro and Smart Electrocardiograph) device

PUBLICATIONS

- Accepted A. Silatan, J. Mohammad Khani, M. Mahmoudi. '**Switching the bright soliton to the dark soliton via Mach-Zehnder modulator**'. *Optik*
- In prep. J. Mohammad Khani, M. Doosti, S. Ghanbari. '**Honeycomb permanent magnetic lattice for ultracold atoms**'. *Physical Review A*
- In prep. S. Ghanbari, J. Mohammad Khani. '**Quantum probability vs classical probability**'. *The Physics Teacher*

SEMINARS AND WORKSHOPS ATTENDED

- July 2021 **26st IASBS Physics school**
Institute for Advanced Studies in Basic Sciences (IASBS)
- Presentations on new topics in physics (e.g. Engineering topological phases of synthetic quantum matter)
- October 2020 **ETSI-IQC Quantum Safe Cryptography Virtual Executive Conference**
ETSI Quantum Event Live Session
- Discuss the business and economic policy imperative to prepare the digital economy to be resilient against quantum attacks.
- Technology and Cryptography Policy Roadmap for Quantum Safe Cryptography.
- February 2020 **Special school on topics in Physics**
Institute for Advanced Studies in Basic Sciences (IASBS)
- Introductions to different orientations of Physics (e.g. Quantum information processing).
- Getting acquainted with modern fields of research in Physics.

PUBLIC SPEECHES

- April 2019 Honeycomb permanent magnetic lattice for ultracold atoms (Department of Physics, Zanjan University), **B.Sc. Project defense**
- April 2018 How to be an entrepreneur (Department of Physics, Zanjan University)
- October 2017 Falling walls lab pitch competition (Conference hall 1, Amirkabir University of Technology)
- July 2017 News interview (Qazvin province News)

SKILLS

pyQuil, TensorFlow
C++, Python, CUDA
Mathematica, MATLAB
Optisystem, Zemax, Optifiber, RP Fiber Calculator
HTML5, CSS3, JS
Linux, Raspberry Pi, Arduino
Photoshop, LaTeX, Microsoft Office

LANGUAGES

- English Professional working proficiency *IELTS will be taken soon*
- Persian Native

OTHER SKILLS

- Management
- Teamwork
- Teaching
- Entrepreneurship
- Leadership
- Public speaking

REFERENCES

Dr. Saeed Ghanbari

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Web page: <http://www.znu.ac.ir/members/ghanbari-saeed/en>

Prof. Mohammad Mahmoudi

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Web page: <http://www.znu.ac.ir/members/mahmoudi-mohammad/en>

Dr. Ahmad Darudi

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Web page: <http://www.znu.ac.ir/members/darudi-ahmad/en>

Dr. Neda Dadashi

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Web page: <http://www.znu.ac.ir/members/dadashi-neda/en>