

# Sepideh Abdollahihashjin

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Webpage : <https://sepideh-abh.github.io/index.html>

SENIOR UNDERGRADUATE, PHYSICS, SHARIF UNIVERSITY OF TECHNOLOGY

## EDUCATION

**Sharif University of Technology**, Tehran, Iran

Bachelor of Science, Physics

– CGPA: 17.46/20

Sep 2018 - May 2023 (Expected)

**Farzanegan 1 High School**, Tehran, Iran

Diploma

– CGPA: 19.46/20

Sep 2014 - May 2018

## RESEARCH INTERESTS

- Superconducting Circuits
- Circuit Quantum electrodynamics
- Quantum Computation and Information
- Complex Systems
- Computational Physics

## INTERNSHIP

**Preparing arbitrary fock states in a cavity, using GRAPE algorithm**

Supervisor : *Prof. Benjamin Huard and Dr. Audrey Bienfait*  
(Quantum Circuit Group, ENS Lyon, France)

Jul - Oct 2022

- Using the GRAPE algorithm to find the control pulses in a cavity-qubit coupled system to reach an arbitrary fock state and finding the right translation between simulation values and amplitudes in the experiment. [Further descriptions](#)

## RESEARCH PROJECTS

**Grup d'Informació Quàntica, Universitat Autònoma de Barcelona, Spain**

Supervisor: *Prof. Andreas Winter*

Apr 2022 - Now

- **Observational Entropy and Correlations:** Finding properties of the Observational Entropy under different measurements.

**Quantum Information Science Group, Sharif University, Iran**

Supervisor: *Prof. Vahid Karimipour*

Feb - Jun 2022

- **Generalized Landau-Streeter channel in the high-dimensions:** Computing quantum information properties of the generalized form of the Landau-Streeter Channel in the higher dimensions.

**Sharif University, Iran**

Supervisor: *Dr. Saman Moghimi Araghi*

Jul 2021 - Now

- **Abelian Sandpile Model:** Examining Self-organized Criticality in the 2d-grid for Abelian Sandpile Model by focusing on longer links' existence.

**Sharif University, Iran**

Supervisor: *Dr. Fakhteh Ghanbarnejad and Dr. Farnoush Farahpour*

Apr 2020 - Apr 2021

- **The way observation reflects the reality of SIR, SEIR, SIRD dynamics:** Estimating the real epidemic dynamics with a random sampling at a macroscopic level.

## COURSE PROJECTS

**Information theory: The Capacity of Classical-Quantum Channels**

Supervisor: *Prof. Mohammad R. Aref -Report file*

Fall 2021

**Quantum Mechanics: Discrete Element Method Simulation for Different Potentials**

Supervisor: *Dr. Abolhassan Vaezi*

Spring 2021

**Computational physics: Ising Model and Phase Transitions Simulation**

Supervisor: *Dr. Fakhteh Ghanbarnejad*

Fall 2020

## WORKSHOPS

**Topology and non-equilibrium dynamics in engineered quantum systems***Max Planck Institute for the Physics of Complex Systems*

Oct 2022

**Quantum Transport with Ultracold Atoms***Max Planck Institute for the Physics of Complex Systems*

Aug - Sep 2022

AWARDS &  
ACHIEVEMENTS**Silver medal**, in Iran's national Olympiad of Astronomy and Astrophysics, 2017Member of **Iran's National Elites Foundation**SELECTED  
COURSES• **Quantum Theory courses:**

- Advanced Quantum Mechanics (M.Sc, 18.5/20), Quantum Computing (Ph.D., 16/20)

• **Information Theory courses:**

- Information Theory (M.Sc, 16/20), Quantum Information Theory (Audit)

• **Complex Systems courses:**

- Complex Systems (M.Sc, 19.5/20), Stochastic Process (M.Sc, 18.9/20), Computational Physics (M.Sc, 18.9/20), Game Theory (M.Sc, 20/20)

[Further descriptions](#)TEACHING  
EXPERIENCES**Teacher Assistant: Stochastic Processes in Bioinformatics (M.Sc)***Dr. Mohammad Hossein Rohban*

Spring 2022

**Teacher Assistant: Game Theory (M.Sc)***Dr. Mohammad Hossein Rahmati*

Spring 2022

**Teacher Assistant: Statistical Modeling (M.Sc)***Dr. Fakhteh Ghanbarnejad*

Spring 2021

**Olympiad Instructor**Providing courses to prepare high school students for the National Astronomy Olympiad. *Fall 2017 - Now*

- Topics: Classical Mechanics, Astrophysics, Cosmology, Spherical Astronomy, Data analysis
- Institutions: [Farzanegan 1](#), [Farzanegan 2](#), [Salam](#), Summer school of National Astronomy and Astrophysics Olympiad (Observational Astronomy test writer)

## SKILLS

**Programming Languages:** [QUA](#), Python (QuTiP, SciPy, NetworkX, Pandas, Matplotlib, Seaborn, Numpy), Matlab**Tools:** cQED (Qubit measurement), [Quantum Orchestration Platform \(QOP\)](#),  $\text{\LaTeX}$ , Mathematica, Office, Adobe Photoshop

## LANGUAGES

**Persian:** Native, **English:** Advanced, **French:** Beginner

## REFERENCES

**Saman Moghimi Araghi, [Sharif University of Technology, Tehran, Iran](#)***Email address: [samanimi@sharif.edu](mailto:samanimi@sharif.edu)**[Webpage](#)***Audrey Bienfait, [Ecole Normale Supérieure, Lyon, France](#)***Email address: [audrey.bienfait@ens-lyon.fr](mailto:audrey.bienfait@ens-lyon.fr)**[Webpage](#)***Benjamin Huard, [Ecole Normale Supérieure, Lyon, France](#)***Email address: [benjamin.huard@ens-lyon.fr](mailto:benjamin.huard@ens-lyon.fr)**[Webpage](#)***Alexis Jouan, [Ecole Normale Supérieure, Lyon, France](#)***Email address: [alexis.jouan@ens-lyon.fr](mailto:alexis.jouan@ens-lyon.fr)**[Webpage](#)*