

# Ali Talashan

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## EDUCATION

Sharif University of Technology(SUT), Tehran, Iran

B.Sc in Physics

Sep. 2021 - present

Grade: 18.33 (GPA out of 20)

## RESEARCH INTERESTS

Quantum Gravity  
Quantum Information & Computation  
Stochastic Processes  
High Energy Physics  
Particle Physics

## SELECTED COURSES

Quantum Information & Computation II: PhD Course, by Prof. Vahid Karimipour	Ongoing, Spring 2025
Stochastic Processes: MSc Course, Mathematics department, by Dr. Kasra Alishahi	Ongoing, Spring 2025
String Theory I: PhD Course, by Dr. Amin Faraji	Ongoing, Spring 2025
Intro. to String Theory: by Dr. Amin Faraji	19.6/20, Fall 2024
Quantum Information & Computation I: PhD Course, by Prof. Vahid Karimipour	14.8, Fall 2024
Group Theory: by Dr. Ali Rezakhani	19.4/20, Spring 2024
Quantum Field Theory I: M. Sc Course, by Prof. Neda Sadooghi	15.3/20, Spring 2024
Quantum Mechanics III: M. Sc Course, by Dr. Ali Rezakhani	18.5/20, Fall 2023
Electromagnetics III: M. Sc Course, by Dr. Reza Rezaei	20/20, Spring 2023
Particle Physics: by Dr. Amin Faraji	19.2/20, Fall 2024
Advanced Mathematical Physics: PhD Course, by Prof. Vahid Karimipour	Audit, Spring 2024
Fundamental Concepts and Cultural History of Physics: by Prof. Bahram Mashhoon & Dr. Shant Baghrum	19/20, Spring 2024
Intro. to Cosmology: by Prof. Bahram Mashhoon & Prof. Farhad Ardalan	20/20, Spring 2023

## SELECTED PROJECTS AND ACADEMIC ACTIVITIES

A Healthier Semi-classical Dynamics, Review, <a href="#">PDF</a> , <a href="#">GitHub</a> by I. Layton, J. Oppenheim, Z. Weller-Davies	Summer 2025
<ul style="list-style-type: none"><li>I reviewed “A healthier semi-classical dynamics” in detail and gave a report on its mathematical derivation, reproduced its key figures, and illustrated a new figure clarifying the <math>\sigma</math>-dependent decoherence rate.</li></ul>	
Stochastic Electrodynamics, Term paper, <a href="#">PDF</a> For Fundamental Concepts and Cultural History of Physics Course	Spring 2024
<ul style="list-style-type: none"><li>I reviewed Stochastic Electrodynamics as a classical stochastic theory which can predict some aspects of Quantum theory.</li></ul>	
Penrose-Hawking Singularity Theorems, Course Project For Intro. to General Relativity Course	Fall 2023
A survey on Gödel's Incompleteness Theorem, Term Paper For Fundamental Concepts and Cultural History of Physics Course	Spring 2024
Coleman-Mandula and Haag-Lopuszanski-Sohnius Theorems Course Project For Particle Physics Course	Fall 2024
No-Communication theorem and EPR paradox, Term Paper For Intro. to Cosmology Course	Spring 2023
Computational Methods in Quantum Physics problems, Course Work For Quantum Mechanics I & II Courses	Spring & Fall 2023
<ul style="list-style-type: none"><li>We computed spectrum of <math>n=12</math> Heisenberg chain, degenerate and non-degenerate state calculations and other computational problems in Quantum Mechanic 2 using MATLAB and Python.</li></ul>	

## Fundamental Physics Summer Camp

Summer 2024

Organizer: Dr. Mohammadjavad Kazemi

- Topics like "Measurment Problem", "Equivalence Principle to Holographic Principle", "Quantum Refrence Frames" etc. were presented.

## Fundamental Physics Winter Camp

Winter 2025

Organizer: Dr. Mohammadjavad Kazemi

- Topics like: "Revision of foundation of EM", "Contextuality", "Thermodynamics Role in Fundamentals of Physics", "Wigner's Friend Problem", "Newtonian and Lagrangian Paradigms" etc. were presented

## QBronze workshop

Fall 2022

Held by QWorld organization

- We learned the basics of Quantum Computing and Programing using Qiskit library in this workshop.

## RESEARCH EXPERIENCE

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### A Survey For Designing a Superconducting Quantum Device/Chip

Held by QWorld Organization

Winter & Spring 2023

Supervised by: P.Kazemikhah, Princeton University

- Focus of the research was on exploring software for Qubit design and the development of quantum circuits and devices, including transmon Qubits after learning the basics of transmon Qubits. Generated workflows, coded implementations, and provided reports on the software functionalities.

## HONORS AND AWARDS

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**Silver Medal**, 33rd National Physics Olympiad

Tehran, Iran, 2020

**Member**, of the National Elites Foundation (INEF)

2021 - Present

## TEACHING AND EXECUTIVE EXPERIENCES

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**Examiner** of national Physics Olympiad

Summer 2025

**Teaching Assitant** of Electromagnetics III, MSc Course Instructed by Dr. Baghran

Fall 2024

**Mentor** of IPhO 2024 Iran's team

Spring 2024

**Teaching** in Young Scholars club

Summer 2024

- A member of Organizing team of 37th Iran's National Physics Olympiad

**Teaching** national Physics Olympiad

Spring 2021 - Present

- Teaching the contents of basic courses like Analytical Mechanics, Electromagnetic, Thermodynamics and ... to Physics Olympiad students.

**Mentor** of SUT Physics Department's Open Day in honor of Physics Day

Fall 2023

**Mentor** of Rasta Summercamp 2022

Summer 2022

## TECHNICAL SKILLS

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**Programming Languages:** python, C/C++, JAVA

**Tools:** Latex, MATLAB, Jupyter Notebook, Mathematica

Quantum Computing SDKs such as Qiskit and SQcircuit

**Languages:** English(Upper Intermediate), Persian(Native), Italian(Beginner), Latin(Beginner)