



# Stefano Mangini

PHD STUDENT · THEORETICAL PHYSICS

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"[...still looking for an outstanding quote...]"

## Introduction

I am a PhD student in Theoretical Physics at the University of Pavia, under the supervision of Prof. Chiara Macchiavello. My research is focused on Quantum Computation, with applications to the field of Quantum Artificial Intelligence. I am very interested in the study of Quantum Technologies, and I wish to play an active role in their development.

Interests: Quantum Computing, Artificial Intelligence, Computation

## Anagraphics

**Nationality** Italian  
**Personal Address** Via Roma 25A, Putignano, 70017, Italy  
**Birth date** 20 January 1996  
**Personal Email** ✉ mangini.stfn@gmail.com

## Education

### University of Pavia

PHD IN THEORETICAL PHYSICS

- Currently researching on Quantum Computation and applications to Quantum Machine Learning.

Pavia, Italy

Nov. 2019 - Ongoing

### University of Trieste

MSC IN THEORETICAL PHYSICS

- Final Grade: 110/110 cum laude.
- Thesis: Continuous Quantum Neuron.

Supervisors: Prof. Fabio Benatti, Prof. Stefano Mancini

Study a possible model for a Continuous Optical Quantum Neuron. In particular, starting from an optical circuit capable of implementing the dynamics of a Perceptron, various encoding for classical data into quantum states are studied. Ideal and real case with states comprising an energy bound are taken into account. Examples of entangled and superposition states are also considered.

Trieste, Italy

Oct. 2017 - Oct. 2019

### University of Trieste

BSC IN PHYSICS

- Final Grade: 110/110 cum laude.
- Thesis: The Ehrenfest model and the dynamics of neutral mutations in evolutionary genetics.

Supervisor: Prof. Edoardo Milotti

Study of the statistical mechanical model first introduced by Ehrenfest, applied to the description of the dynamics of a neutral mutation in a simulation of a group of cells. The research involved both theoretical aspects concerning the study of the statistical and biophysical model, and computational ones related to the programming of the simulation.

Trieste, Italy

Oct. 2014 - Jul. 2017

### High School "Majorana-Laterza"

SCIENTIFIC HIGH SCHOOL

- Final Grade: 110/110.

Putignano, Italy

Sep. 2019 - Jul. 2014

## Skills

**Quantum Programming** Qiskit, PennyLane  
**Programming** Python, C/C++, Fortran, Bash  
**Software** Mathematica, Matlab, MS Office, Latex  
**Language** Italian (*mother tongue*), English (*very fluent*)

## Experience

### University of Trieste

STAGE

- Topic: Continuous Variable quantum computation.
- Acquired the necessary skills and knowledge for a quantum generalization of a Perceptron, as discussed in my Master Thesis.

Trieste, Italy

Feb. 2019 - Apr. 2019

## National Institute for Nuclear Physics (INFN)

### INTERNSHIP

Trieste, Italy

Feb. 2017 - Mar. 2017

- Topic: Neural Networks Simulation in Mathematica.
- Deepened my knowledge of Neural Networks and Wolfram's Mathematica, by programming, implementing and optimizing a neural network algorithm (Neural Relax) into Mathematica.

## Publications

2019

**Continuous variable quantum perceptron** F. Benatti, S. Mancini and S. Mangini, *International Journal of Quantum Information*, 17(08): 1941009, DOI: 10.1142/S0219749919410090.

IJQI, arXiv

## Conferences

### Hackathon on CEREBELLUM MODELLING

Pavia, Italy

#### ATTENDEE

Jan. 2020

- I took part in an Hackathon on computational neuroscience where I learnt about the state of the art of this discipline, and I followed some hands-on tutorials on cerebellum modelling using different programming libraries.

## Extracurricular Activity

### Student Representative

Trieste

#### DEPARTMENT OF PHYSICS

2019

- Student Representative for Master of Science in Physics in the University of Trieste.

### Divuligation Events

Trieste

#### ORGANIZATION AND MEDIA

2014-2019

- *Caffè dei Quanti*: Helped with organization, media communication, and advertisements (photos and short videos of the events), of a series of scientific divulgation events conceived by Prof. Angelo Bassi.
- *AISF*: Vice President of the local committee of the Italian Association of Physics Student (AISF). Organization and participation in several scientific divulgation events.
- *Mini-Maker Faire*: As a volunteer, helped with organization and acted as interpreter for english speaking Makers to italian visitors.

### Entrepreneurship

Trieste

#### CONTAMINATION LAB

2019

- Attended a School for promoting entrepreneurship and soft skills among students.

### High School Exchange Program

Australia

#### INTERCULTURA

Jun. 2012 - Aug. 2012

- Spent two month in Australia hosted by a local family, as part of an high school exchange program.