VIOLA GATTUS

Adress: 299 Upper Brook Street, Manchester M13 0FW
Email: violagattus@gmail.com ⋄ Mobile: (+39)3455976911
Personal Website: violagattus.github.io

I showcase some of my projects and reports in my personal website.

EDUCATION

University of Manchester *2017 - Present day*
MPhys Physics with Theoretical Physics
First year average grade: 70.4 %
Second year average grade: 74.0%
Third year average grade: 86.2%

- Achieved 92% mark on oral presentation of essay on *The Black Hole Information Paradox* which was peer reviewed by fellow students and complimented for clarity of language and physical insight.
- Obtained high first class mark in Theory Computing Project on *Numerical Solutions of the Time-dependent Schrodinger equation* solving a more realistic case of quantum scattering using the finite difference method.
- Participated in three Grand Ethical Challenges and was member of the Wellbeing Champions team involved in promoting positive well-being within the School of Physics and University-wide.

Scientific Liceo Gramsci-Amaldi *2013 - 2017*
Esame di Stato (equivalent to A level): 100 %
Final year average grade: 9.64/10

- Scientific subjects include Mathematics (10/10), Physics (10/10) and Natural Sciences (10/10)

PUBLICATIONS

- V Gattus and S Karamitsos 2020 *Eur. J. Phys.* **41** 065407

PEER REVIEW

- *Physica Scripta*

RESEARCH EXPERIENCE

MPhys Project on theoretical physics *Present day*
University of Manchester, supervised by Prof. F. Bezrukov

· *Non-commutative approaches to Quantum Field Theory and Inflation*

- Currently working on reformulating QFT in non-commutative spaces, with particular attention to phenomenology and comparison of different theoretical approaches.

Supervised research team project on condensed matter physics *Summer 2020*
University of Manchester, supervised by Dr A. Principi and Prof N. Walet

· *Second quantization, superconductivity and Majorana fermions theory*

- Read and studied advanced topics of theoretical condensed matter physics from peer-reviewed articles. Have learnt to analyse a paper's content methodically proving the results presented.

- Improved my ability to work in team by collaborating with 13 peers and supervisors in solving challenging problems

Supervised research project on theoretical physics *Summer 2019 – July 2020*
University of Manchester, supervised by Dr S. Karamitsos

· *Correspondence between classical and quantum uncertainty for coupled systems*

- Worked on finding the classical counterpart to the quantum mechanical uncertainty principle for coupled particle systems. Improved my time management working on the project alongside university studies and yet achieving my best academic performance so far.
- Have submitted a paper titled "Dimensional analysis and the correspondence between classical and quantum uncertainty" (DOI: 10.1088/1361-6404/aba6bc) in collaboration with Dr. Karamitsos which was accepted for publication in the European Journal of Physics. Refined my scientific writing skills by reaching publishable standards.

Supervised research project on theoretical biophysics *Summer 2018*
University of Cagliari, supervised by Prof M. Ceccarelli and Dr I. Bodrenko

· *Exchange kinetics of two molecular states in NMR*

- Worked in interdisciplinary project encompassing physics, biology and medicine in collaboration with department of Theoretical Biophysics. Project consisted of analysing the exchange kinetics of two molecular states in NMR by performing eigenanalysis on coupled Bloch equations, deriving the limit for slow and fast molecular transitions and interpreting the results in a physical setting.

WORK EXPERIENCE

Tutoring *2019 - Present day*
MyTutor

- Experienced tutor at GCSEs and A level of Mathematics and Physics with great reviews from the students.
- Successfully underwent selection process which included interview to assess ability to communicate scientific content in a clear and constructive way.

Student Ambassador *October 2019-December 2019*
University of Manchester,Department of Physics and Astronomy

- Worked on welcoming new students to the School of Physics and improved my communication skills having to present department and courses available.
- Improved my ability to work in a team with other ambassadors and academic staff to follow on the prescribed schedule and offer the best experience to candidates.

TECHNICAL SKILLS AND INTERESTS

Programming

- Proficient in the use of Python to fit, graph and analyse complex data set. Wrote 2D finite difference numerical solver for Theory Computing project.
- Good knowledge of Mathematica to perform integrals with numerical methods such as Composite Simpson's rule, graph and manipulate data.
- Basic knowledge of C++, HTML and CSS.

Extracurricular activities

- Independent physics outreach activity in introducing fundamentals of quantum mechanics to high school audience helped to improve my communication and presenting skills.
- Selected and have attended the 2020 Conference for Undergraduate Women in Physics to discuss the problem of gender inequality in physics and engage in various educational activities.

REFERENCES

Academic Advisor: Prof Michael Brown , School of Physics and Astronomy, The University of Manchester, Manchester, M13 9PL. Email: m.l.brown@manchester.ac.uk

Please contact for any further information or clarification.