

# Jack Morse

---

Email: [jack.morse2001@gmail.com](mailto:jack.morse2001@gmail.com) • Mobile: 07706465305 • Address : 44 The Crescent, St Albans, AL2 3NF  
Online bio: <https://jmorse2020.github.io>

---

## Education

**BSc Mathematics and Physics (Predicted First Class), *University of Bath* (2020 - Present)**

- **Notable modules:** Lasers, Electromagnetism, Quantum and Atomic, Condensed Matter, Vector Calculus, ODEs and Control, Algebra, Analysis.

**A Levels, *Townsend C of E School* (2018 - 2020)**

- Physics (A\*), Mathematics (A\*), Chemistry (A), Further Mathematics (A).

## Publications

1. **Sub-10-attosecond Fibre-length Stabilisation using Phase-locked Spectral Interferometry.\***
2. **Automated Long-Term Stability of a High Energy Laser.\***

---

\* Currently submitted to journals and are under review, awaiting publication.

## Research Experience

**Vulcan High Power Laser Industrial Placement, *Central Laser Facility* (July 2022 - September 2023)**

- Operated and maintained the Vulcan laser system, identifying and fixing damage and misalignment, computing energies based on experimenters' requests, and collecting diagnostic information.
- Designed and fully implemented a path-length stabilisation system by a novel approach using spectral interferometry. Included an in-fibre interferometer and diagnostics with zero-delay monitoring and control with a slow (commercial) spectrometer and motor; and tuned a two-level PID loop to stabilise delay changes ( $< 10$  as) in the system.
- Produced internal statistics reports on the laser success for each experiment by developing a bespoke software to collate shot energy data for each shot into target areas.
- Developed a software to regulate pump-laser energy prior to injection into a OPCPA system to prevent damage.
- Hands-on experience with spectrometers, autocorrelators, oscilloscopes, flash-lamp amplifiers, OPA, and CPA.

## Computing Skills

**Experience using:** MATLAB, Python, C#, Excel, L<sup>A</sup>T<sub>E</sub>X, GitHub.

**Numerical techniques:** FFTs, minimisation, integration and differentiation, linear algebra, solving PDEs.

## Extra-curricular Experience

**Science Student Council, *University of Bath* (2023 - Present)**

- Provided feedback to the university above the departmental level which influences improvements to the delivery of science courses.

**Head Boy, *Townsend C of E School* (2019 - 2020)**

- Implemented multiple initiatives of my own (including a school-wide recycling system, student voice suggestion box, digital card readers for charity event donations, organised weekly community litter picks) and listened to the ideas of others.

**Royal Marines Cadets, *St Albans Division* (2012 - 2020)**

- Experience and qualifications such as leadership, Silver D of E, offshore boating, teamwork, ceremonial drill, fieldcraft and reaching the highest rank of Sergeant, coming first in a national selection process
- Developed methodical thinking, problem solving and the ability to present to large audiences.

## References

1. **Dr Pedro Oliveira**, Researcher at Central Laser Facility
2. **Dr Marco Galimberti**, Researcher at Central Laser Facility
3. **Dr Peter Mosely**, Senior Lecturer at University of Bath