

Optical Physicist/Engineer

Position Description

Employment Type:	Full-time
Hours of Work:	38 hours per week, worked flexibly between 8am and 6pm, Monday - Friday
Term:	Ongoing
Award:	Professional Employees Award 2020
Annual Salary & Benefits:	Provided on request
Location:	QuantX Labs, Lot Fourteen, Level 2 Space Lab, Frome Road, Adelaide
Reports To:	R&D Team Lead

Benefits

- 1. Be part of an emerging, world-leading deep-tech company with a strong pipeline of work in the Defence and Space sectors.
- 2. Contribute to the development of QuantX's flagship product, "Cryoclock", being integrated into Australia's leading surveillance system, the Jindalee Operational Radar Network (JORN), optical atomic clocks for satellite Integration and quantum magnetometry.
- 3. Live, and benefit from, our company values of "respect, excellence and integrity"
- 4. Work In an energetic and vibrant workplace in the Lot Fourteen Innovation precinct located in the cultural centre of the Adelaide CBD.

About the Position

We are looking for a graduate level laser physicist/optical engineer, to work across our pipeline of cutting-edge projects and products from quantum sensing to orbital optical atomic clocks. The role will focus on building and testing prototypes of optical systems and working with a team of engineers to develop these technologies into real-world products.

You will ideally have experience in low noise laser systems, optical fibre, intensity and frequency noise measurement and feedback control systems. It would also be beneficial if you are familiar with atomic energy level structure, atomic spectroscopy and digital control.

You will be responsible for the contributing to the design of laser and quantum systems, assembling optical prototypes, characterising and troubleshooting performance and authoring reports on performance for stakeholders. While you are not expected to have experience, you should have a desire to learn and work across a range of areas including quantum-magnetometry, precision time theory, orbital relativity, mesh networking, machine learning and laser satellite systems.

About You

We are seeking a Laser Physicist/Optical Engineer with hands-on experience in research and development, that enjoys delivering cutting edge technologies to real world problems. You will want to work in a small but rapidly growing company in which your individual efforts will be a much larger component of the company's activities. You will want to stretch yourself beyond the safety of your home discipline expertise because this is a necessity within a small company. You will have a tertiary degree in Physics or Engineering with a focus on laser and optical systems and 2-5 years of experience in research and development.



The successful applicant will be a highly versatile individual; capable of working in a diverse team of engineers, technicians, scientists and operations staff in a rapidly growing company. This will mean that you will frequently be called to work closely with other team members with different skills to bring about a device with characteristics that meet the market need. For this end, you attitude and how you collaborate are just as important as your skills and experience.

Duties & Responsibilities

Technical	 Contribute to the design of low noise laser systems for optical atomic clocks Build and characterise free-space and fibre optical systems, Including Intensity and frequency noise measurement. Collaborate with a team of scientists, mechanical and electrical engineers to translate lab hardware Into satellite payloads.
	Design and optimise digital control systems
	• Predict and verify atomic and optical system performance using computer analysis and numerical modelling.
	 Troubleshoot and fault-find complex optical systems
	Prepare technical reports, analyse data and provide recommendations on
	technological roadmaps.

The responsibilities as specified above may be altered in accordance with the changing requirements of the position.

Special Requirements

• Australian Citizen and has or can obtain a Defence Security Clearance

Selection Criteria

Experience Requirements	 A Bachelor Degree in Physics or Engineering or equivalent experience A HDR degree or hands-on experience in laser/atomic or optical systems. Demonstrated ability to analyse and understand complex data and measurements Demonstrated experience in computational analysis or numerical modelling Familiarity with electrical and optical test equipment. Experience in data preparation, report writing and lab documentation. Demonstrated ability to deliver to schedules and deadlines.
Desirable Experience	 A real understanding or frequency, phase, Fourier transforms and bandwidth. Experience in feedback control systems and transfer functions. Experience In laser design and use of electo-optical components, frequency doublers, etc. Understanding of signal to noise, noise budgets and measurement uncertainty. Familiarity with the implementation of mesh-networking protocols. Experience in the design and use of digital signal processing and analogue to digital interfaces. Familiarity with applying machine learning techniques for complex data analysis. Experience in Python or Matlab scripting or programming. Familiarity with remote access of tests equipment and automation
Personal Qualities	 A hunger to learn, grow and take responsibility for new techniques and methods. The ability to work both independently with minimal supervision and in close collaboration with a engineers, scientists and customers. Achieving High-performance: results orientated, accepts accountability and can be relied upon. Working Together: being an effective team member to develop open, honest and supportive relationships Developing Others: works well to inspire, engage and empower others