

## CAREER OPPORTUNITY

The CSIR (Council for Scientific and Industrial Research) is a leading scientific and technology research organisation, implementing projects throughout Africa and making a difference in people's lives.

### Doctoral Studentship: Ion Trapping and Cooling for Quantum Technologies

#### About the job:

The CSIR National Laser Centre is searching for an outstanding **Doctoral** candidate with an interest in either experimental or theoretical quantum mechanics to advance our ion trapping project. Ion traps are designed to trap single, isolated (ionized) atoms and study fundamentals and applications of their quantum dynamics.

#### Project description:

- *Study directions* – trapped ions as ultra-sensitive probes, quantum control, quantum simulation, and methods for mitigating de-coherence.
- Projects will expose the participant to a wide range of experimental and theoretical techniques including:
  - *Experimental* - quantum control of ions, laser cooling, laser frequency stabilisation to atomic frequency references, laser beam shaping, vacuum technology, microwave technology, computer instrument control.
  - *Theoretical* - quantum physics of single trapped atoms, quantum optics, quantum simulation, and theory of de-coherence, atomic physics, laser beam shaping, and finite element methods for simulating electric fields.

#### Qualifications, skills and experience:

- Recognised Master's degree in physics with a solid understanding of textbook subjects of quantum mechanics, classical mechanics, electrodynamics and statistical physics.
- Beneficial skills: experimental laboratory experience, experimental laser experience, general optics and laser background, cold atom physics, numerical modelling, quantum optics background, theory of open quantum systems.
- Capacity to think independently.
- Competence in technical writing.
- Ability to work in a team.

Should you meet the above requirements, please go to the URL indicated below in order to apply; select the position reference number **301173** complete the application form and attach your CV: [www.csir.co.za/apply.php](http://www.csir.co.za/apply.php)

**Closing date: Open-ended**

**PLEASE NOTE THAT FEEDBACK WILL BE GIVEN TO SHORTLISTED CANDIDATES ONLY.**

Should you experience any problems in submitting your application, please contact the CSIR Recruitment Centre. [Recruitmentqueries@csir.co.za](mailto:Recruitmentqueries@csir.co.za). Please **do not** submit your application to this mailbox.

*The CSIR gives preference to candidates who meet the job requirements and who will add to the cultural and gender diversity of the organisation. By applying for this position at the CSIR, the applicant understands, consents and agrees that the CSIR may solicit a credit and criminal report from a registered credit bureau and/or SAPS (in relation to positions that require trust and honesty and/or entail the handling of cash or finances) and may also verify the applicant's educational qualifications and employment history. **The CSIR reserves the right not to appoint if a suitable candidate is not identified.***