

PhD position CQT at SPMS/NTU, Singapore
Compact atomic interferometer for inertial force sensing

Atom interferometry is now routinely used for high-performance inertial sensors. Although it is now mature enough for such instruments to be commercially available, this technology has not yet reached its full potential. In particular, the current setups, based on the so-called Kasevich-Chu interferometer, are requiring large free-fall sequences to achieve state-of-the-art sensitivity, leading to bulky and maintenance-demanding experimental systems.

We are currently developing an alternative method where the atomic wave packet is trapped in an optical lattice during the interferometric sequence. This approach allows long interrogation time within a small volume and competitive sensitivity. The main advantage over the Kasevich-Chu interferometers is that the system can be more compact. This is a key advantage for deploying the system outside dedicated research laboratories. On a more fundamental aspect, the system will be used to perform general relativity test.

We are looking for a Ph.D student to conduct experiments on this highly competitive research area together with an in-place team. Interested applicants should be strongly motivated by experimental quantum physics, and hold a bachelor or master degree in physics.

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