Australian National University

TECHNICAL SUMMARY

Gryo-magnetometer for Inertial Navigation Systems

Adobe stock Image #188390039

The Quantum Magnetometer Market is expected to grow to US$700 million by 2025 (Research and Markets) driven by compelling value propositions in medicine, military, and geophysical applications.

Using the knowledge of atoms and atomic movement, researchers at The Australian National University (ANU) have developed one device that measures both rotational and magnetic field changes along two perpendicular axes, simultaneously, without crosstalk. This added capability does not add significant cost or size to the device as it is largely done with novel driving and analysis. We have thus developed it into an energy efficient, non-cryogrenic device for use in Inertial Navigation Systems (INS) and other high-precision magnetometer and gyroscope applications.

Technology (TT2020-022)

At the current development stage, the fundamental noise limits are competitive with the very best to atomic magnetometers and laser gyroscopy available today. The accuracy, low noise, size, energy efficiency and single product configuration is targeted toward the high-grade systems required commercial inertial navigation or defence.

Potential benefits

> **Multi-parameter:** Simultaneous measurements of both rotational and magnetic fields with one device
> **No interference:** this design overcomes cofounding effects of rotation and magnetic field interferences with each other
> **Sensitivity:** Versatile, compact and state-of-the-art sensitivity

Potential applications

> Navigation
> Space Technologies
> Mobility & Transport
> Defence
> Instrumentation

Opportunity

ANU is seeking external partners in the areas inertial navigation with interests in atomic magnetometers and gyroscopes to collaborate to advance the technology and are interested in licensing the technology for further development

IP status

The IP is owned by the ANU

Key research team

> Ben Buchler, Fellow, ANU Research School of Physics
> Karun Paul, PhD Student, ANU Research School of Physics
> Morgan Hedges, Postdoctoral Fellow, ANU Research School of Physics

Contact

Kiara Bechta-Metti
Associate Director, Commercialisation & IP
Office of Research and Innovation Services
The Australian National University
T: +61 407 234 248| E: kiara.bechta-metti@anu.edu.au

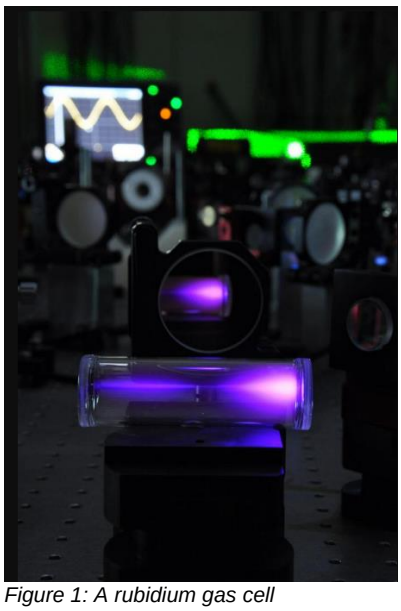

Figure 1: A rubidium gas cell