

Quantum technologies for Defence applications

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In this talk I will explain how the raise of quantum technologies will affect the applications in Defence and Security. Quantum technologies hold the promise to change the way we perform computations, communications and sensing. This has been acknowledged by several countries, like the USA, UK and Australia. Europe has launched the Quantum Flagship program with special emphasis in Defence applications. As early as 2014, the Defence Science and Technology Laboratory in the UK wrote a document [1] explaining how the Quantum Technologies could affect our ability to act in offensive and defensive situations. From the wealth of Quantum Systems, I will focus on the interest of my group in nanoscale Quantum Sensors which will have a great impact in Defence as well as Civil applications. In particular, we are working in some magnetic and inertial sensors based on levitated nanoparticles (see image below). These systems are versatile as we can use different particles to suit different needs. They also allow for the possibility of optically manipulating the particle, which can be delivered with optical fibers to the position of the particle, thus allowing remote sensing and encapsulation of the particles.

References

- [1] Pritchard, Jonathan, and Stephen Till. "UK Quantum Technology Landscape 2014." *Defence Science and Technology Laboratory, DSTL/PUB75620* (2014).

Figures

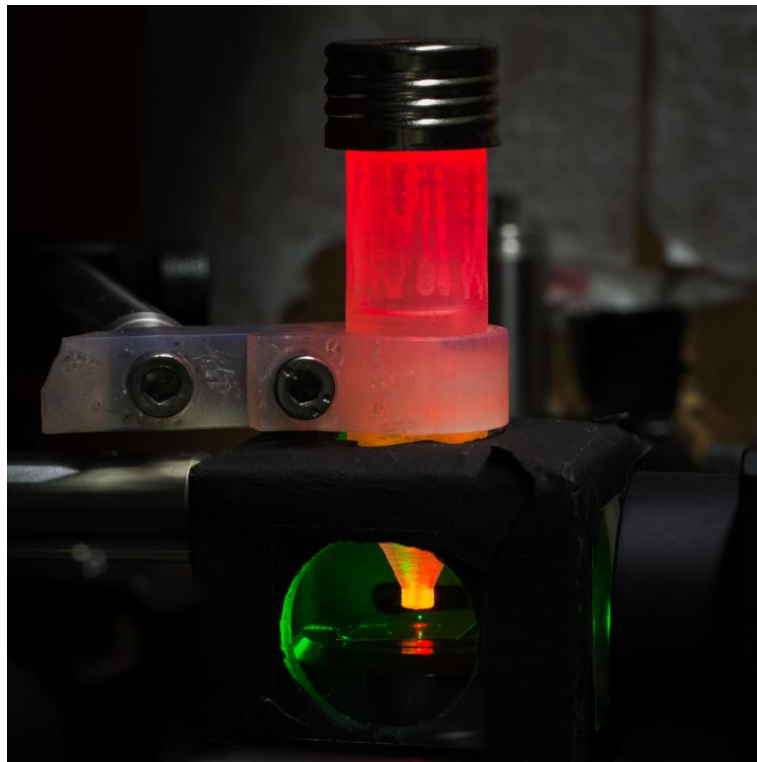


Figure 1: Nanodiamond levitating over a microscope slide due to optical forces