

## CASPA atmospheric drag mission

*Tuesday, 14 February 2023 16:00 (2 hours)*

To gain better understanding of the upper atmospheric dynamics requires more accurate determination of the mass density distribution in the thermosphere. Improved measurements of drag, by means of satellite accelerometry, can be used to more precisely determine this distribution. In addition, atmospheric drag in Low Earth Orbit (LEO) is particularly of interest for climate modelling, weather forecasting and satellite orbit prediction. RAL Space and the University of Birmingham are developing a Cold Atom Space Payload Atmospheric Drag Mission (CASPA-ADM). The aim of the project, supported by the UK Centre for Earth Observation Instrumentation (CEOI), is to develop a technology demonstrator based on Cold Atom Interferometry (CAI) to take sensitive measurements of atmospheric drag. The underlying CAI technology has been previously flown on the Chinese Space Station, the International Space Station, and in sounding rockets. However, it has not yet been used as the fundamental sensor technology in a free flight space mission. The team is producing a space-suitable accelerometer that can be embedded in small satellites such as 16U CubeSats and are addressing the engineering challenges associated with space qualification and miniaturisation, while keeping the performance level of systems with larger Size, Weight and Power (SWaP)

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