



Space gravimetry with atomic quantum sensors

Franck Pereira Dos Santos

LNE-SYRTE, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, Paris, France (franck.pereira@obspm.fr)

Quantum sensors based on atom interferometry have demonstrated their ability of performing extremely sensitive and long term stable measurements of inertial quantities (accelerations, rotations) on the ground. Their level of performance, especially in terms of sensitivity, would largely be improved in space, thanks to the possibility offered by microgravity to drastically extend the interrogation time. This allows in particular to design accelerometers for future generation gravity field missions. I will discuss the expected performances of such sensors in the context of their application in space and the requirements on the instrument and on the environmental parameters for their operation at their best possible level of performance. I will then discuss possible designs for different mission scenarios (based on single or twin satellites).