

Strapdown multi-axis inertial quantum sensor

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The Joint Laboratory iXAtom (Bordeaux, France) brings together the knowledge of Exail, an industrial expert in inertial navigation and industrial quantum sensors, and the LP2N, a public laboratory specialized in atom interferometry. The goal is to perform technological advances using cold atoms to develop the next generation of inertial sensors for geophysics and navigation applications. We build a compact and transportable 3-axis Raman interferometry sensor [1]. Our goal is to validate a "strapdown" strategy by tackling the issues of vibrations and rotations using hybridization.(Figure 1)

I work on the hybridization of the inertial sensor with gyroscopes and accelerometers to compensate rotation effects. We are performing a mirror orientation correction stage and a phase correction stage to retrieve the atomic fringes and make reliable acceleration measurements. [2]

[1] S.Templier et al., submitted

[2] P.Cheiney et al., Phys. Rev. 10 034030 (2018)

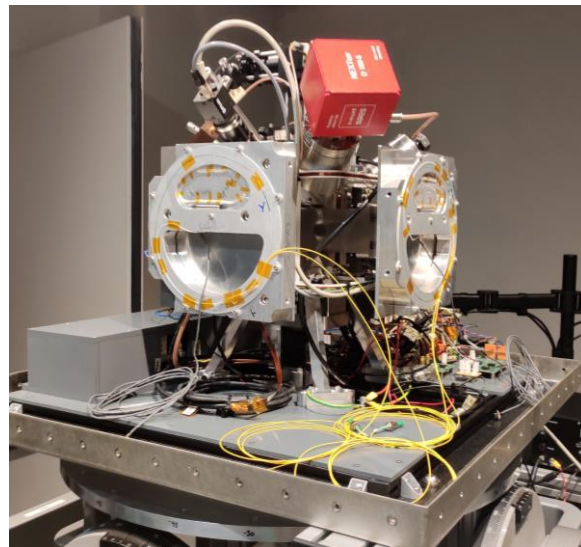


Figure 1 : The inertial Sensor