ID de Contribution: **1** Type: **Non spécifié**

Z=70, the gravitational force awakens

jeudi 8 juin 2023 11:00 (1h 30m)

Optical Lattice Clocks have progressed swiftly in the last years, and their frequency can now be controlled at the 18 significant digits level. This opens the way towards application to multiple scientific fields, and notably to Earth Sciences: as quantum sensor, these clocks present the unique feature to be sensitive to the local gravitational potential, which is not the case with any ground-based classical device. This capacity can be used to realize a cartography of the geopotential, thus complementing traditional methods based on leveling or satellites, to better constraint the knowledge of the geoid, and possibly to detect early signs of earthquakes or to accurately quantify the rise of the sea level.

In the framework of the ANR-funded project ROYMAGE, SYRTE is starting the construction of a transportable ytterbium lattice clock. This instrument will be deployed in the future over the French territory, where the fiber network REFIMEVE+ (equipex) allows remote comparisons to the ~12 stationary European optical clocks. In this seminar, we present the original approach of the loading of the atoms, the specificities of the design to fight perturbing effects on the field, and the multiples challenges we are facing assembling the system.

Orateur: Mme RAHMOUNI, Fatima (LNE-SYRTE)