Poster Session #A
Laboratory tests of gravitation

A10

ROYMAGE project: a transportable clock for geodetic and geophysical applications

Guillaume Lion (IPGP IGN Paris)

ROYMAGE (hoRloge Optique à Ytterbium Mobile Appliquée à l'exploration GEodésique) is a project funded by the French ANR dedicated to develop a transportable ytterbium (Yb) optical lattice clock. Connected to the fiber network REFIMEVE+, the clock will allow remote clock comparisons to perform chronometric geodesy applications and tests of gravitational time dilation. With a relative frequency uncertainty targeted in the low 10^{-17} (equiv. 10 cm in height) at a first step, the clock will provide geopotential measurements which are not directly available with traditional techniques (e.g. GNSS/levelling, InSar, gravimetry, gradiometry). This could revolutionize the determination of the gravity field and geodetic vertical references,the exploration of the Earth's internal dynamic and the connection between sea level measured either by tide gauges or by satellites. We present here the objectives and motivations for the 4-years project involving 4 partners in the consortium (Observatoire de Paris, IPGP, IGN and SHOM).