



Quantum gravity sensors and Atomic Clocks

EPIC Online Technology meeting

Bruno Desruelle, April 3rd 2020

Company expertise

- A unique technology based on quantum manipulation of cold atoms



- 28 employees (15 PhD) , gathering a deep scientific & technological expertise :
 - Quantum physics, Optics & laser
 - Electronics & microwave, Opto-mechanics, ultra-high vacuum
 - Real-time software, data acquisition and signal processing

Our key products

Absolute Quantum Gravimeter



Features :

- . Absolute gravity measurements at $1e-9$ g
- . Turnkey solution
- . Continuous data acquisition over months

Applications :

- . Management of underground resources
- . Monitoring of the Earth
- . Civil Engineering (detection of voids...)

MuClock



Features :

- . Ultra stable Time and frequency reference :
 - short term stability : $< 5e-13$ at 1 s
 - long term stability : $< 3e-15$, no drift
- . Turnkey solution

Applications :

- . Definition of timescales
- . GNSS
- . High performance and secure time stamping



Our expectations

- New business opportunities :
 - Quantum gravity sensors & atomic clocks, or other applications of quantum technologies
 - Intelligent laser systems and advanced photonic solutions
- Consolidate our supply chain with second source suppliers :
 - Qualified narrow linewidth seed lasers (< 50 kHz)
 - Qualified PPLN waveguides
 - Compact ion pump (> 6 l/s)
 - High purity Rb dispensers
 - ...