



Call 2017

# TAIOL

Trapped Atom Interferometers  
in Optical Lattices

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# SUCCESS STORY (highlights)



**CHALLENGE** – TAI supports limited spatial separations and coherence times

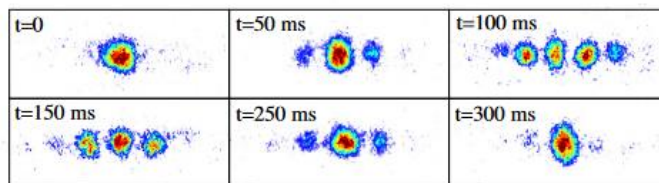


**SOLUTION** – new beamplitting methods :  
« beat-lattices » and double Bragg-diffraction in twin lattices

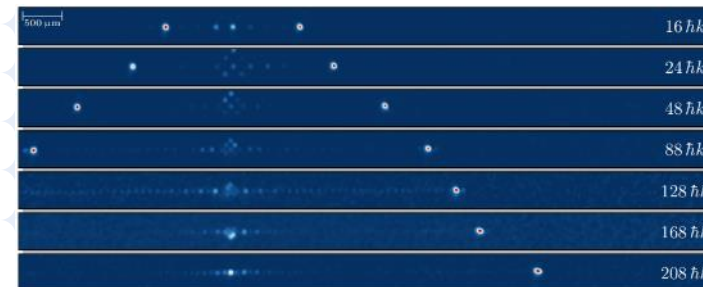


**PLANNED AND SURPRISING/UNPLANNED OUTCOMES**

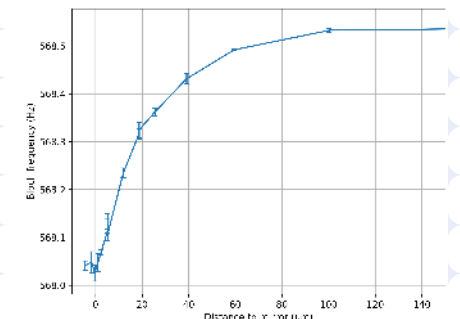
**Bloch oscillations with 1 s coherence time in a 10  $\mu\text{m}$  lattice spacing « beat-lattice »**



**Spatial separations of 6 mm with twin lattices compatible with a trapped geometry**



**Demonstration of short-range force sensing with a TAI**



# IMPACT (RRI aspects)



**GENDER:** equal opportunity jobs but ...



**OPEN SCIENCE:** 1/3 of the publications in open access journals + a deposit in Zenodo



**SCIENCE EDUCATION:** Training high school pupils and students in arts and cognitive sciences



**PUBLIC ENGAGEMENT:** Dissemination towards the general public (radio TOK FM, conference/debates)

# IMPACT (potential users)



## RELEVANT INDUSTRY BRANCH

Sensors, inertial navigation systems



## KEY COMMERCIALY RELEVANT APPLICATIONS

Inertial sensors (accelerometers, gyros) for navigation  
Gravity sensors for geoscience



## EXISTING/POTENTIAL END USERS

iXblue, Thales, AtomSensors, Teledyne-e2v



# QUANTERA

ERA-NET Cofund in Quantum Technologies



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