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 beamsplitting 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 µm 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
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