

# Atom interferometers

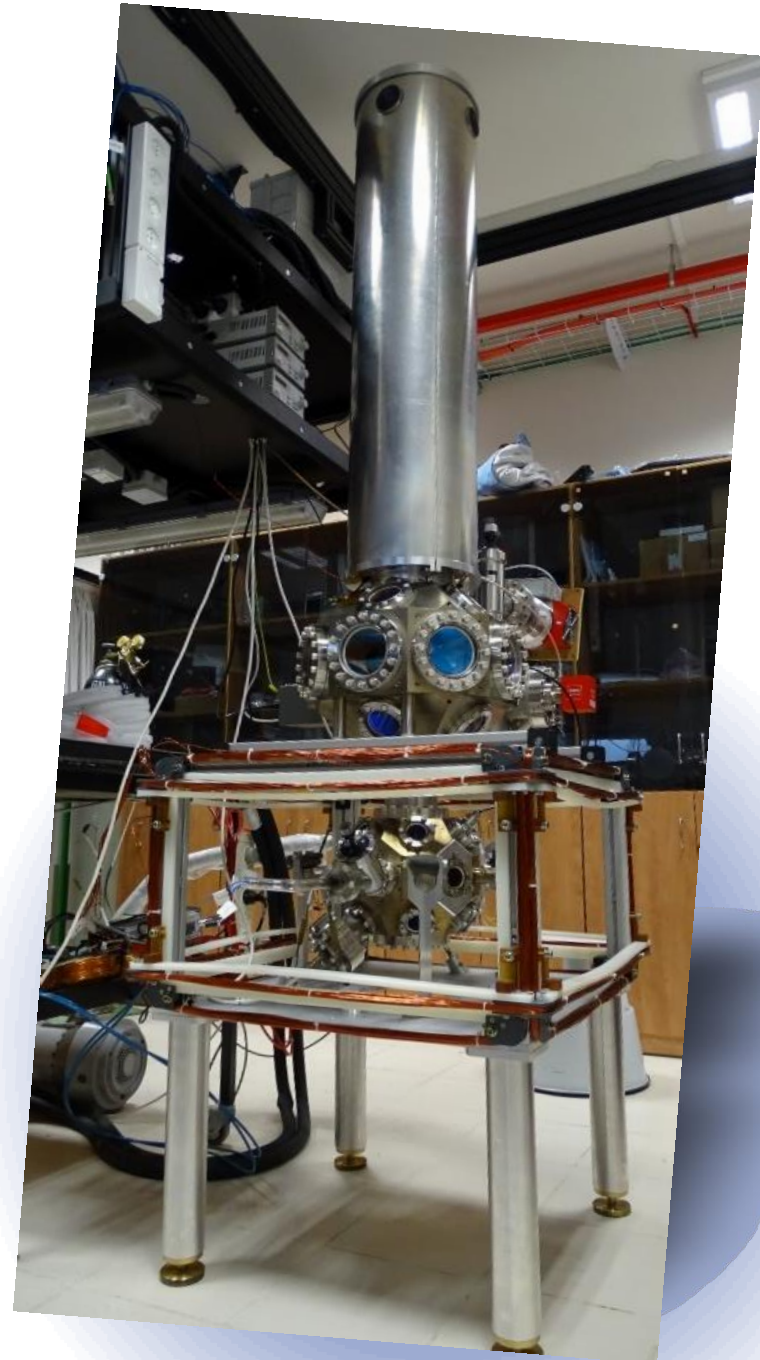
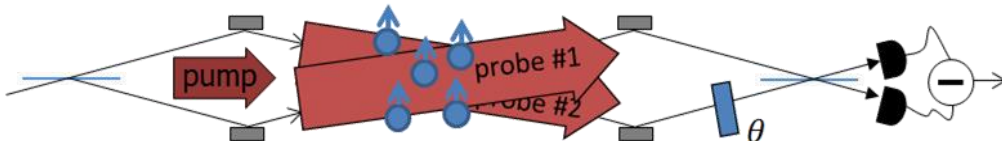
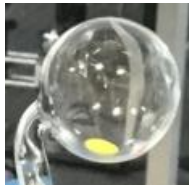
- *Weizmann: Ofer Firstenberg & Nir Davidson*
- *Rafael (Quantum optics lab)*

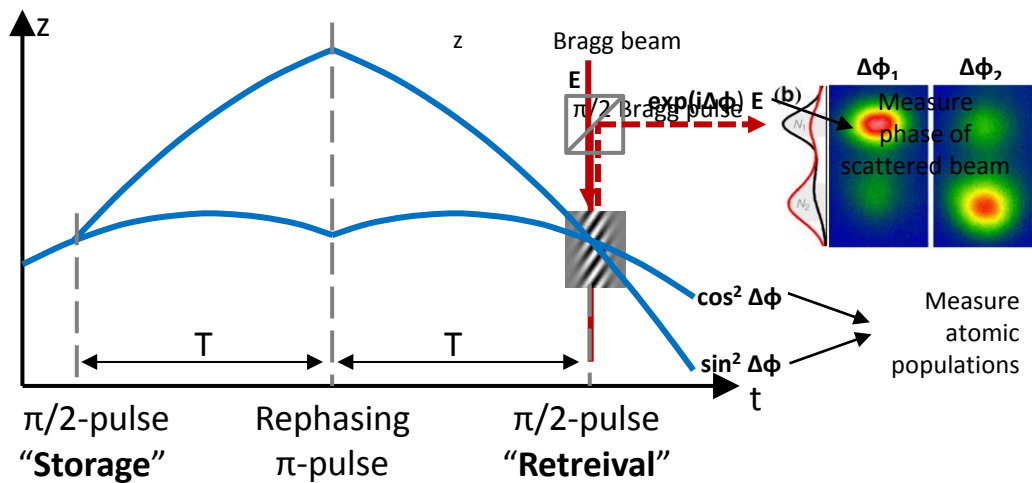
**Compact** sensors for:

- **Gravity** (linear acceleration)
- **Rotation**

Techniques:

- Atomic **levitation** (cold atoms)
- **Coherent** phase readout (cold atoms)
- **Hybrid 780/795 nm** (cold atoms)
- **Photon drag** enhanced by slow-light (hot atoms)



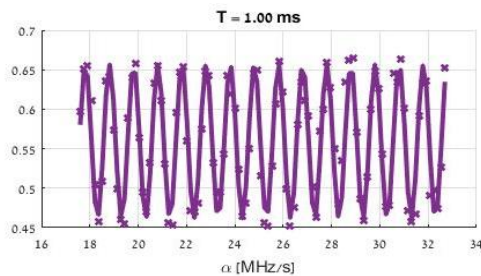
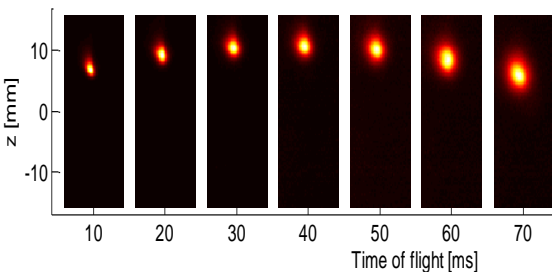
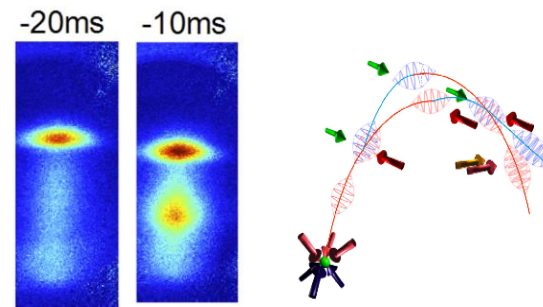


### Scheme 1: Coherent readout

- + phase information
- + collinear,
- + phase recycling
- + partial readout

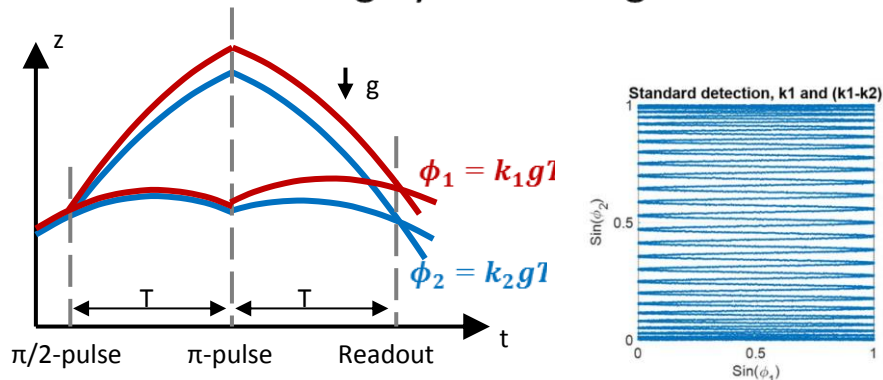
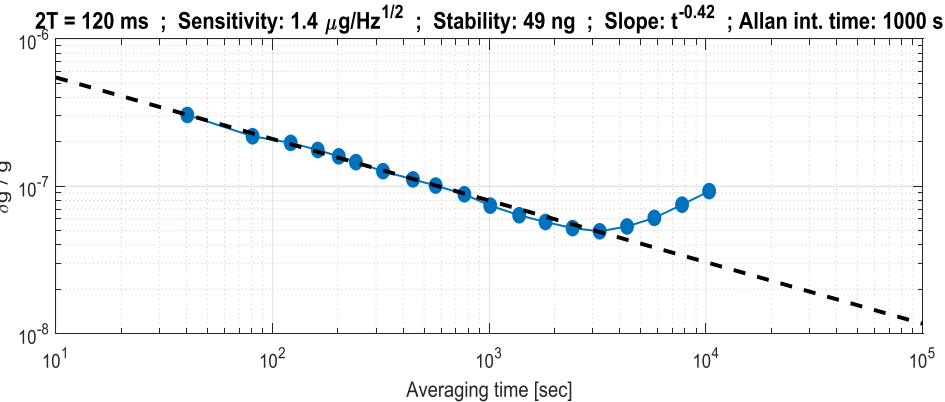
### Scheme 2: Levitation

- + example: gyro in "microgravity"



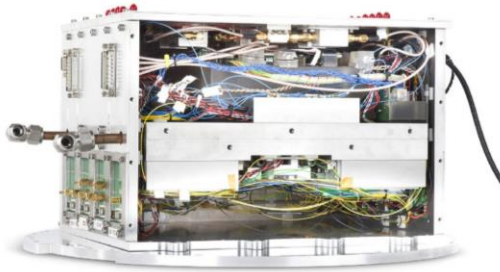
### Scheme 3: Hybrid 780/795 nm (or "THz interferometer" $k_1 - k_2$ )

- + Extending dynamic range x50



# Achim Peters / Humboldt Univ. Berlin

- **Mobile** atom interferometers
  - Compact diode **laser systems**
  - High-flux **atom sources**



- **Real-life systematics** in atom-interferometer gravimeter (magnetic fields, wave front aberrations..)
- Interferometers in **microgravity**:
  - Atom interferometer payload on a **sounding rocket**
  - (Dual species) Atom interferometer for **space**

