

**Physics Department Jagiellonian University (<http://zf.if.uj.edu.pl/en>)**

**Postdoc position for Experimental research on Quantum Coherences in atomic gases**

We want to explore new experimental possibilities arising from the creation of suitably prepared superpositions of quantum states of atoms. In particular, we aim at development of ultra-sensitive magnetic-field sensors for applications to magnetometry, geo- and astrophysics, medical and bio-diagnostics, and to studies of quantum light-atom interfaces.

Detailed objectives are:

- 1) creating superposition states with a maximum amplitude,
- 2) realization of optical logic gates based on Zeeman coherence,
- 3) analysis of relaxation processes in cold atomic sample.

We use atom traps with laser beams and magnetic and electric fields. The superposition states are created with Zeeman sublevels, which allows to use magnetic fields for their control. The investigated gas samples are in special antirelaxation cells at about 300 K as well as cold (about 100 microK) and ultracold (about 100 nK) trapped atoms close to quantum degeneration.

We expect

- PhD in physics, material science or related fields,
- experience in experimental research (documented by a list of publications). Particular expertise will be required in laser physics, laser cooling and trapping, coherence optics, field magneto-optics, vacuum technique and/or related fields,
- teamwork ability and leadership qualifications,
- supervising of students (MSc and PhD students),
- good command of English.

Required documents

- covering letter,
- curriculum vitae,
- copy of PhD certificate,
- two reference letters (at least one from the PhD supervisor),
- description of the previous scientific work including the list of publications and copy of three most important publications.

We offer

- access to state of the art experimental apparatus,
- work in a dynamic team,
- participation in the edge-cutting research,
- involvement in an international collaboration,
- prospects of further scientific career at the Jagiellonian University,
- stipend for 2-3 years (after successful completing of a 6 month probation period)

Candidates fulfilling the requirements should send their application and required documents to Prof. Wojciech Gawlik ([gawlik@uj.edu.pl](mailto:gawlik@uj.edu.pl)) with the Postdoc application in the Subject line by January 31, 2014.