

# Quantum Optics Laboratory

Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga Skunu str. 4



## Research

- Optical frequency metrology with a femtosecond optical frequency comb.
- Development of optical frequency standards and comparison with radio-frequency standards.
- Development of ultra-stable resonators for laser stabilization.
- Free-space optical frequency transfer and distance measurements.
- Global network of sensors, Internet of Things.

## People

Dr. **Janis Alnis**, group Leader

<https://scholar.google.lv/citations?user=kYt72h8AAAAJ>

Dr. **Ilja Fescenko**

[http://www.researchgate.net/profile/Ilja\\_Fescenko](http://www.researchgate.net/profile/Ilja_Fescenko)

[https://scholar.google.lv/citations?user=nLTU\\_OUAAAAJ](https://scholar.google.lv/citations?user=nLTU_OUAAAAJ)

Dr. Christina Andreeva, Visiting scientists, Bulgaria

Dr. Asparuh Markovski, Visiting scientist, Bulgaria

Dr. Nikolay Bezuglov, Visiting scientist, Russia

MSc Inga Brice, PhD student:

MSc Aigars Apsitis, technical assistance

Jāzeps Rutkis, physics bachelor student

## Collaborations

- **Precision spectroscopy of atomic hydrogen** and optical frequency distribution over fiber link. Prof. T. Hansch group at MPQ, Garching, DE.
- **Positronium spectroscopy**. Dr. P. Crivelli group at ETH Zurich, CH. Preparing a 486 nm laser and 500 W build-up cavity. Building tellurium molecular reference in Riga for optical frequency measurements.

- **Air quality measurements** in laboratory and atmosphere, **benzene, Hg, dust, CO<sub>2</sub>**.  
Prof. M. Knite at Riga Technical University, Dr. A. Ubelis, Dr. A. Skudra LU ASI.
- **Coherence preserving ion crystals and spectroscopy using semiconductor diode lasers**.  
Prof. S. Svanberg, Prof. S. Kroll, Lund University, Sweden
- **Laser spectroscopy of atoms, molecules, NV magnetometry**.  
Prof. M. Auzins and Prof. R. Ferber, Riga Laser Centre, University of Latvia.
- **Spectroscopic imaging of magnetic field**. Prof. A. Weiss Fribourg university. CH.
- **Internet of Things technologies**. Exploring new approaches for internet connectivity and global control.  
Electronics companies Farnell, Element14, Texas Instruments.

## Financing

We acknowledge support by REGPOT project "Unlocking and Boosting Research Potential for Photonics in Latvia – Towards Effective Integration in the European Research Area" (FOTONIKA-LV FP7-REGPOT-CT-2011-285912), 2012-2015

## Precision measurement system of light frequency



