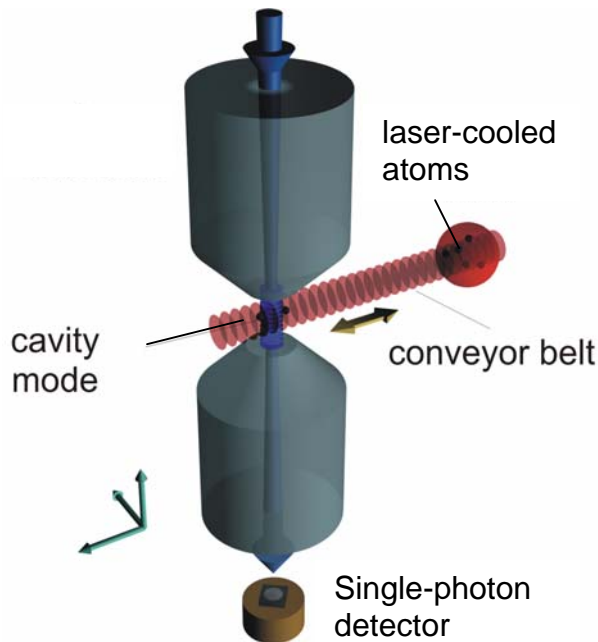


Master- / Diploma Thesis in Experimental Physics

Quantum Information with Single Neutral Atoms



Schematic of the experiment: Single atoms are moved into a high-finesse cavity

In our lab, you can gain hands-on experience with:

- quantum optics and atomic physics
- lasers, fibers and precision optics
- low-noise electronics
- computer control and automated measurement
- data analysis
- computer-aided design of optics and electronics

In our experiment, we

- laser cool and trap **single atoms**
- observe them by high-resolution **imaging**
- **transport** them with laser beams
- read/write their **quantum state**
- couple them to **single photons** stored in a high-finesse cavity



We aim at

- investigation of **fundamental quantum mechanical physics**
- application of all this to **Quantum Information Processing**



single atoms trapped by laser light

Topics for Diploma- / Master thesis, e.g.:

- *Cavity field induced quantum zeno effect of single atoms*
- *Reversible state-exchange between single atoms and the cavity field*

If you are interested, please contact: **Wolfgang Alt (Phone -3471), René Reimann (-3128) or Miguel Martínez Dorantes (-6580)**

For more details, visit our homepage: http://www.iap.uni-bonn.de/ag_meschede