

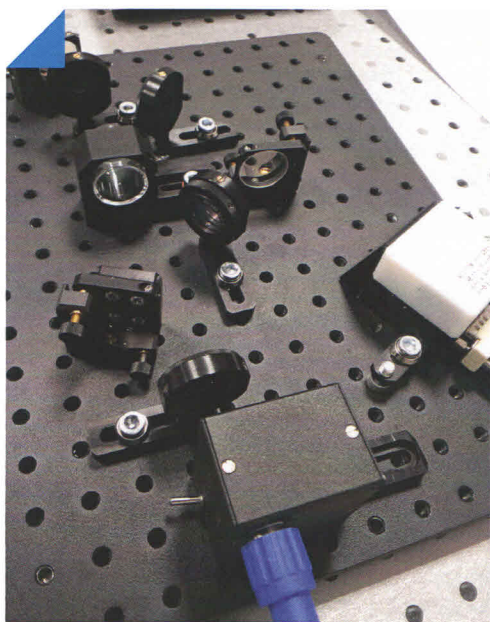
Lab Work for Students

In 2013-15 the Russian Quantum Center started the laboratory practicum for undergraduate and graduate students. In addition to the considerable number of students working at the RQC, this practicum was attended by several dozen students from the leading Moscow educational institutions such as MIPT, Lomonosov MSU, Bauman MSTU, MPhI, and MIS&S.

The practicum was focused on the application of a single-frequency tunable semiconductor laser integrated with modern computerized measuring equipment for precision Doppler-free spectroscopy. The subject of the work was the hyperfine structure of D2 line transition in Cesium atoms measured using saturation absorption spectroscopy. Students observed the dependence of atomic optical transition linewidth on laser power, measured the value of hyperfine

splitting, observed the formation of crossover resonances, etc. The practicum received quite positive and constructive feedback from the students who attended it.

The laboratory practicum was organized by RQC external fellow Vladimir Velichansky and RQC Principal Investigator Alexey Akimov and managed by RQC researcher Sergei Nikitin.



The lab work was organized very impressively. There was time to prepare independently and work through the material, especially for those for whom the topic was new. This was followed by a substantive discussion with you, which gives you an opportunity to fill in all the gaps in understanding and obtain a better grasp of the material. The components of the device itself were very easy to use, adjusting them was easy even for a person encountering them for the first time, and a camera was provided to speed up the process. All the measurement devices are connected to a computer interface that can save data, screenshots, and measurements. The result is interesting lab work adapted to modern realities, in which regard the theme itself is very interesting and includes a very broad spectrum of scientific questions.

Mikhail Tarabrin

I am extremely happy that I had the chance to participate in this lab work. I can say that this was one of the highlights of the last two or three months. Despite my weak preparation in atomic physics, you explained everything to me clearly. At first I thought that I would not have the chance to touch the elements of the device, and I would have to watch everything from far away. But my fears were unfounded. Thank you very much, RQC, for a job well done!

Akmarov Konstantin

My impressions of the lab work are very positive, everything was clearly and logically presented and described, although this is not really my specialty. The booklet with a description of the laboratory work was written in detail with a great number of formulas, all the calculations were clear. The work itself was logically structured and sequenced. I myself do not work in spectroscopic studies, but here everything was at the visible level.

Alexey Blatov