

## Zeeman splitting in boron-like charged ions

*Monday, 19 September 2016 18:00 (2 hours)*

As a result of cooperative theoretical and experimental research of the g-factor of light highly charged ions, the best up-to-date determination of the electron mass was provided [1]. It's expected that independent determination of the fine structure constant will be the result of the corresponding investigations of heavy hydrogen-like and boron-like ions [2,3]. The ARTEMIS experiment is an important contribution towards this goal and it's being carried out presently in GSI [4]. Apart from the g-factor, the non-linear contributions to the Zeeman splitting in boron-like ions are important. Also hyperfine-structure effects should be taken into account for ions with nonzero nuclear spin. Corresponding investigations were performed for  $1s_{1/2}$  and  $2s_{1/2}$  states [5,6,7]. We present theoretical study of the quadratic Zeeman effect and the hyperfine-interaction correction to the linear Zeeman effect for the  $2p_{1/2}$  state including the QED correction.

- [1] S. Sturm et al., Nature 506, 467 (2014).
- [2] V. M. Shabaev et al., Phys. Rev. Lett. 96, 253002 (2006).
- [3] A. V. Volotka and G. Plunien, Phys. Rev. Lett. 113, 023002 (2014).
- [4] D. von Lindenfels et al., Phys. Rev. A 87, 023412 (2013).
- [5] D. L. Moskovkin et al., Phys. Rev. A 73, 052506 (2006).
- [6] D. L. Moskovkin et al., Phys. Rev. A 77, 063421 (2008).
- [7] V. A. Yerokhin et al., Phys. Rev. A 85, 022512 (2012).

**Primary author:** AGABABAEV, Valentin (Saint-Petersburg State University)

**Co-author:** Mr GLAZOV, Dmitry (Saint Petersburg State University)

**Presenter:** AGABABAEV, Valentin (Saint-Petersburg State University)

**Session Classification:** Poster Session and Coffee