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Hyperfine structure calculations in hydrogenlike and heliumlike atoms

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We will present the current status of QED theory for hyperfine structure in hydrogenlike and heliumlike atoms in comparison to precision experimental results. For $^3He^+$ we use this comparison to obtain the nuclear polarizability effect. In the case of ^{3}He atom we derive theoretical result for 2^3S hyperfine splitting with uncertainty of 41 Hz and observe excellent agreement with the experimental data. For $^{6,7}Li^+$ we use the comparison between theory and experiment to obtain the effective Zemach radius. We confirm the surprising result that the effective Zemach radius of ^{6}Li is smaller than that of ^{7}Li. Lastly, we use the results for the nuclear structure obtained from Li^+ to obtain accurate theoretical predictions for the hfs in $^{6,7}Li^{2+}$ for which no experimental data is available so far.

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