

Title: Radiation corrections to atomic spectra.

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Abstract: In present time accuracy of spectroscopic measurements achieved fantastic accuracy 1 part in 10 to the power 14. If these measures are followed by theoretical calculations of similar accuracy we can test quantum electrodynamics and part of the standard model responsible for parity violating weak forces by comparing theory and experiment and set some of the basic physical constants like Rydberg constant, mass and radius of nucleus, constant of fine structure and it's variation in time etc. For achieving this kind of accuracy of calculations one must take into account so called radiation corrections. This thesis focus is on accurate calculation of the most important of them, the self-energy of electron in one-loop approximation.

Keywords: Quantum electrodynamics, radiation corrections, self-energy of electron.