

LAMB SHIFT IN HYDROGEN-LIKE ATOM INDUCED FROM NON-COMMUTATIVE QUANTUM SPACE-TIME

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ABSTRACT. In this work we present an important contribution to the non-commutative approach to the hydrogen atom to deal with lamb shift corrections. This can be done by studying the Klein-Gordon equation in a non-commutative space-time as applied to the Hydrogen atom to extract the energy levels, by considering the second-order corrections in the non-commutativity parameter and by comparing with the result of the current experimental results on the Lamb shift of the 2P level to extract a bound on the parameter of non-commutativity. Phenomenologically we show that the non-commutativity effects induce lamb shift corrections.