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Testing Space-Time Non-Commutativity with High Precision Spectroscopy

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Atomic spectroscopy has evolved considerably in recent years and it is passed from the stage of just a confirmation experiment of atomic theories to that of an indicator for new paths to understand the nature, as has been demonstrated by the results of R. Pohl et al., Nature 466, 213 (2010) and A. Antognini et al., Science 339, 417 (2013). We use the experimental results of the spectroscopy of hydrogen-like systems to place limits on one of the extensions of the Standard Model which is the theory of non-commutativity. We study hydrogen-like atoms ions, as well as exotic ones such as muon-systems in the framework of this theory.

Primary author: Dr MOUMNI, Mustafa (University of Biskra; Algeria)

Co-author: Prof. BENSLAMA, Achor (University of Constantine1)

Presenter: Dr MOUMNI, Mustafa (University of Biskra; Algeria)

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