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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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