

Università degli Studi di Trieste

Dipartimento di Fisica

Seminario

Umberto Marconi

INFN Sezione di Bologna

Wednesday, May 9, 2.00 PM – Lecture Room A, F building, Dip. di Fisica – via Valerio 2 – Trieste

Measuring the Leading Order Hadronic contribution to the anomalous magnetic moment of the muon with space-like data.

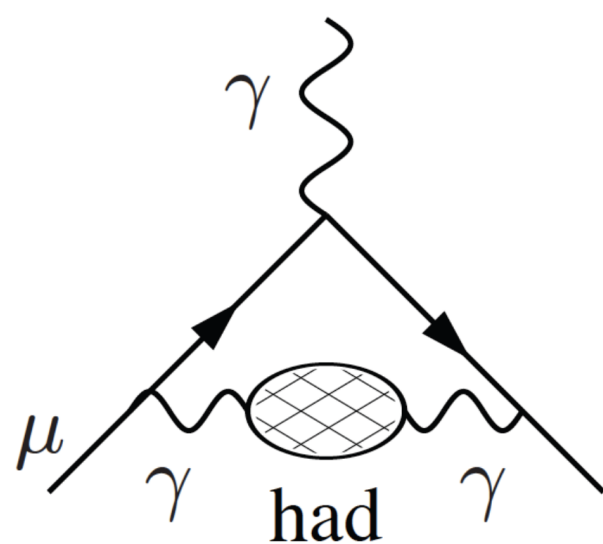


With the muONE experiment we propose a novel method to determine the Hadronic Leading Order (aHLO) contribution to the anomalous magnetic moment $g-2$ of the muon with space-like data. The aHLO can be calculated by knowing the hadronic shift of the effective electromagnetic coupling as a function of the space-like transferred momenta occurring in the muon – electron elastic scattering. A precise measurement of the hadronic shift of the effective electromagnetic coupling can be performed by exploiting the elastic

scattering of 150 GeV muons (currently available at CERN North area) on atomic electrons of low-Z material segmented in thin targets. The measurement of the anomalous magnetic moment of the muon presently exhibits a 3.5 deviation between theory and experiments. In the next few years the anomalous magnetic moment will be measured to higher precisions at Fermilab and J-PARC. The theoretical prediction can be improved by reducing the uncertainty on the leading hadronic correction aHLO to the $g-2$. The direct measurement of aHLO in the space-like region will provide a new independent determination competitive with the



time-like dispersive approach, and will consolidate the theoretical prediction of the muon $g-2$ in the Standard Model. It will allow therefore a firmer interpretation of the measurements of the future muon $g-2$ experiments at Fermilab and J-PARC.



Organizzazione a cura di: G. Cantatore, E. Vesselli

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Everyone interested in the topic is welcome to attend

Informazioni: seminari@ts.infn.it