The 16th International Workshop on Tau Lepton Physics (TAU2021) (Virtual Edition)

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Third order correction to the muon lifetime

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In this talk I will present the calculation of the QED third order correction to the muon lifetime. This result is obtained in the so-called heavy daughter approximation, i.e. the decay rate is computed in the limit of equal muon and electron masses which yields crucial simplifications in the evaluation of multi-loop Feynman diagrams. Despite the electron being about 207 times lighter that the muon, our result allows to determine the such third order correction at physical values of the muon and electron masses, with about a 15% uncertainty. Finally I will discuss the impact in future measurements of the Fermi constant.3s

What is your topic?

Author: Dr FAEL, Matteo (KIT Karlsruhe)

Presenter: Dr FAEL, Matteo (KIT Karlsruhe)

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