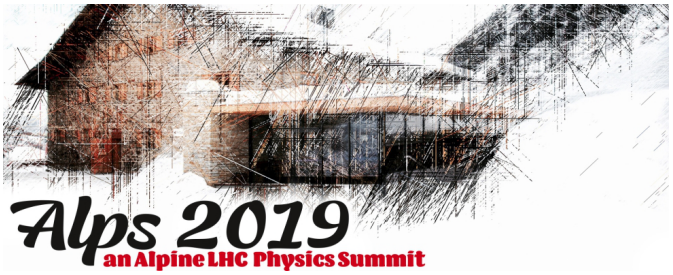

Contribution ID: **2** Type: **Afternoon Session**

The magnetic moments of muon and electron and implications for a large muon EDM

Thursday 25 April 2019 18:15 (15 minutes)

With the long-standing tension between experiment and Standard-Model (SM) prediction in the anomalous magnetic moment of the muon, $a_\mu = (g-2)_\mu/2$, at the level of 3–4σ, it is natural to ask if there could be a sizable effect in the electric dipole moment (EDM) d_μ as well. In this context it has often been argued that in UV complete models the electron EDM, which is very precisely measured, excludes a large effect in d_μ. However, the recently observed 2.5σ tension in $a_e = (g-2)_e/2$, if confirmed, requires that the muon and electron sectors effectively decouple to avoid constraints from $\mu \to e\gamma$. I discuss UV complete models that possess such a decoupling and show that, in such scenarios, there is no reason to expect a correlation between the electron and muon EDM. New limits on d_μ improved by up to two orders of magnitude are expected from the upcoming $(g-2)_\mu$ experiments at Fermilab and J-PARC. Beyond, a proposed dedicated muon EDM experiment at PSI could further advance the limit. In this way, future improved measurements of a_e, a_μ, as well as the fine-structure constant α are not only set to provide exciting precision tests of the SM, but, in combination with EDMs, to reveal crucial insights into the flavor structure of physics beyond the SM.

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