

Project:

Model-independent parameterization of muon decay amplitudes

Muon decay into  $(\mu \rightarrow e + \nu_\mu + \bar{\nu}_e)$  is one of the most well studied processes in elementary particle physics. It is almost a pure weak interaction process. QED and QCD contributions to this decay are small. For this reason possible effects of new physics might be seen there without screening by strong and electromagnetic interactions.

Contributions of new physics to observable distributions in the muon decay depend on details of the corresponding model. Nevertheless, it is possible to introduce a limited number of so-called Michel parameters standing at different Lorentz structures. Accurate measurement of these parameters is a power tool in the search for deviations from the Standard Model. New possibilities appear in studies of the leptonic tau decays which can have a higher sensitivity to new physics.

The purpose of the research project is to update the model-independent parameterization of (non-radiative and radiative) muon and tau decays taking into account the lepton mass in the final state. Values of the Michel parameters in some models beyond the SM will be also estimated.

Literature: Article "Michel parameters" in Wikipedia and references therein.