

Improved description of the leading model dependent contribution to the $\tau^- \rightarrow \pi^- \pi^0 \nu_\tau \gamma$ decay and implications on the muon MDM

Content

In this work, we improve the numerical estimate of the ω -channel of the $\tau^- \rightarrow \pi^- \pi^0 \nu_\tau \gamma$ process, the leading model dependent contribution in the VMD approach, by incorporating the correlation among the parameters involved in the $\omega\pi$ form factor. We profit from experimental information on the $\omega\pi$ spectral function, measured in the decay $\tau^- \rightarrow \pi^- \omega \nu_\tau$ by the CLEO Collaboration, and an importance sampling procedure to account for the correlation between the parameters used to model the corresponding form factor. In the description of the $\tau^- \rightarrow \pi^- \pi^0 \nu_\tau \gamma$ process, we evaluate the ω -channel contribution and its interference with the structure independent part. We exhibit its effect in the dipion invariant mass distribution and then compute the electromagnetic correction function $G_{em}(t)$. We obtain the uncertainties of these observables using the set of correlated parameters, and show that they are largely reduced with respect to the uncorrelated case. The implication on the long distance electromagnetic correction of the muon magnetic dipole moment is obtained.

Summary

Primary author(s) : Mr. ESPARZA, Leonardo (Instituto de Física)

Presenter(s) : Mr. ESPARZA, Leonardo (Instituto de Física)