Scalars 2015

Contribution ID : 47

Improved analysis of the CLFV process: mu e to e e in muonic atom

Content :

We proposed a new charged lepton flavor violation (CLFV) process, $\mu^- e^- \rightarrow e^- e^-$ in a muonic atom, as one of the promising processes to search for new physics beyond the standard model [1]. It was found that the attractive interaction of leptons with the nucleus in the muonic atom enhances the transition rate of the $\mu^- e^- \rightarrow e^- e^-$ process. We report on our improved the anarysis of this process by taking account the distortion of the out-going electrons in the nuclear Coulomb potential and the relativistic treatment of the muon and the electrons. As results, we found significant enhancement of the transition rate. The transition rate for ^{208}Pb becomes about 7 times larger than the previous calculation, which enhances the sensitivity of this process to discover the CLFV process.

[1] M. Koike, Y. Kuno, J. Sato and M. Yamanaka, Phys. Rev. Lett. 105, 121601 (2010)

Primary authors : Dr. YAMANAKA, Masato (Nagoya University)

Co-authors : Prof. KUNO, Yoshitaka (Osaka University) ; Prof. SATO, Joe (Saitama University) ; Prof. SATO, Toru (Osaka University) ; Mr. UESAKA, Yuichi (Osaka University)

Presenter : Dr. YAMANAKA, Masato (Nagoya University)

Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--