

Abstract Submitted
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Electron population during the cascade of kaonic nitrogen atoms

TAKAHISA KOIKE, Advanced Meson Science Laboratory, RIKEN — The Particle Data Group assigned 493.677 ± 0.013 MeV to the charged kaon mass as a world average, but there is a serious disagreement between the most two recent mass values deduced from kaonic atom x-rays, which differ 60 keV although their uncertainties are ~ 10 keV[1]. In order to settle this discrepancy, new precise kaon mass measurement using kaonic nitrogen atom x-rays in a gaseous target is planned at the DAΦNE[2,3]. For the determination of the kaon mass within the 10 keV error, the electron screening effect on the kaonic x-ray energy becomes crucial issue to be calculated correctly. It needs the knowledge of the electron population at the moment of x-ray emission, which depends on the balance between Auger electron emission and electron refilling during the atomic cascade process. In preparation for the forthcoming kaon mass measurement, we are developing the atomic cascade code for kaonic nitrogen atoms, which enables us to determine the electron population at each kaon atomic level. Our cascade model has been improved to get further details of the electron configuration during the cascade[4]. We will report our recent results of the cascade calculation, including the density dependence.

1. S. Eidelman *et al.*, Phys. Lett. B592, 1 (2004).
2. G. Beer *et al.*, Phys. Lett. B535, 52 (2002).
3. T. Ishiwatari *et al.*, Phys. Lett. B593, 48 (2004).
4. T. Koike, Genshikaku Kenkyu, Vol.49 no.6, 159 (2005).

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