

Abstract Submitted
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Beta-Neutrino Correlation in Laser-Trapped ^{21}Na ¹ P.A. VETTER, Lawrence Berkeley National Laboratory, J. ABO-SHAEER, B.K. FUJIKAWA, Lawrence Berkeley National Laboratory, S.J. FREEDMAN, R. MARUYAMA, UC Berkeley Dept. of Physics/Lawrence Berkeley National Laboratory — We have re-measured $a_{\beta-\nu}$ in ^{21}Na in a magneto-optic trap. We measure the momentum spectrum of the recoil nuclei by time-of-flight, using low-energy electrons shaken off by the recoil as a start signal. This scheme is a factor of 25 more efficient than our previous experiment (N.D. Scielzo *et al.*, PRL **93**, 102501 (2004)). We also detect autoionized Na_2 , formed via photoassociation in our MOT. We believe that our previous measurement was erroneous because of contributions to the data from beta decays occurring in molecular Na. We have characterized the molecule formation rate as a function of trap population, and detected autoionized $^{21}\text{Na}_2^+$. We have acquired data using much smaller trapped samples, for which the molecular fraction of the decay events is an order of magnitude smaller, and we have taken data using a dark MOT, in which molecule formation is suppressed by three orders of magnitude. Our new result is inconsistent with our previous measurement, agrees with the calculated value of $a_{\beta-\nu} = 0.554(2)$, with absolute uncertainty about 0.006.

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