

Abstract Submitted
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Measurement of the Beta-Neutrino Correlation of ^{21}Na Using Shakeoff Electrons¹ P. VETTER, J.R. ABO-SHAEER, S.J. FREEDMAN, R. MARUYAMA, Lawrence Berkeley National Laboratory — We have measured the $\beta - \nu$ correlation coefficient, $a_{\beta\nu}$, in ^{21}Na using a laser-trapped sample. We measure the energy spectrum of the recoil nuclei by measuring their time-of-flight in coincidence with the atomic electrons shaken off in beta decay. High detection efficiency of these low-energy electrons allows good counting statistics, even with low trap density. Low trap density suppresses photoassociation to molecular sodium, which can cause a large systematic error in the beta decay correlation. Our measurement, $a_{\beta\nu} = 0.5502(60)$ with a 1% fractional uncertainty, agrees with the Standard Model prediction $a_{\beta\nu} = 0.553(2)$, but disagrees with our previous measurement which was susceptible to error introduced by molecular sodium. We summarize precise measurements of $a_{\beta\nu}$ and their consequences for searches for Beyond Standard Model scalar and tensor current couplings. We will make a few remarks about the future of precision measurements of beta decay using optical traps.

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