where the $\mathfrak{R}$ are the nuclear radial functions, T_Ω is a radial operator whose form depends on the choice of interaction Ω, and $L(r)$ is a bilinear combination of the electron and neutrino radial functions. This integral combines the rather accurately known lepton functions with the poorly known nuclear functions. The neutrino radial functions are spherical Bessel functions[19] which for small r (in the nucleus) are quite accurately

$$f_{\kappa'}{}' \sim r^{l'(-\kappa')}, \quad g_{\kappa'}{}' \sim r^{l'(\kappa')}, \tag{9}$$

where l' is the "orbital angular momentum" corresponding to the κ value given by the subscript. For the electron functions, we go back to the inside solution of the finite-size nucleus. The quadrature solution of the two coupled Dirac radial equations[15] immediately supplies us with the indicial behavior of the radial functions,

$$f_\kappa \sim r^{l(-\kappa)}, \quad g_\kappa \sim r^{l(\kappa)}, \tag{10}$$

and yields an infinite series whose terms differ by an even integral power of r, oscillate in sign, and decrease in magnitude; the convergence and sign alternation are preserved if the series is reordered into a power series. Knowing these properties, the solution for a particular potential is achieved by substituting the two functions, expressed as the indicial factor times a power series in r^2, into the coupled radial equations, thus obtaining recursion relations between the coefficients.[3] It turns out in our case that four terms in the series give an accuracy of better than 0.1% even for the highest Z. We can now perform some sort of average on the power series, leaving an integral

$$\int_0^R r^2 dr \mathfrak{R}_f{}^* T_\Omega \mathfrak{R}_i r^{l+l'}, \tag{11}$$

which is independent of lepton characteristics (except for the trivial appearance of the orbital angular momenta which merely reflect the selection rules). This matrix element is the same for capture of any orbital electron, and for beta decay for that matter. The traditional procedure[7] amounts to evaluating the series at the nuclear surface. Instead, we have used a uniform weighting over the nuclear volume. For the large components, the two procedures differ by only five percent at most. For the small components, the discrepancy is larger, but then the small components only occur where there is a mixture of matrix elements, so that there is merely added a small uncertainty to a much larger one. In short, for a nucleus of finite-size, the variation of the wave functions over the nuclear volume is so small that the method of averaging matters little.

[19] M. E. Rose and R. K. Osborn, Phys. Rev. **93**, 1315 (1954).

Erratum: Normal Modes of Aluminum by Neutron Spectrometry

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In the legend of Fig. 13 the filled circles for [110] directions should have $\alpha=(0,0,1)$ and the filled squares $\alpha=1/\sqrt{2}(1,\bar{1},0)$.