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Monte Carlo simulations for a carbon-14 beta spectrum measurement XAVIER DAVENPORT, PAUL VOYTAS, ELIZABETH GEORGE, Wittenberg University, LYNN KNUTSON, University of Wisconsin-Madison — The Conserved Vector Current (CVC) hypothesis of the standard model of the electroweak interaction predicts there is a linear contribution to the shape of the spectrum in the beta-minus decay of 14C. In order to provide a strong test of the CVC hypothesis, measurements of the 14C decay spectrum will be taken using a magnetic spectrometer. Scattering in the source material and from the supporting Be foil will lead to distortions of the measured spectrum, especially since the 14C radiation is so low in energy (156 keV endpoint). Simulations in both EGSnrc and Geant4 radiation transport software are being constructed to model the scattering effects and correct for distortion in the observed beta spectrum.

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