

Abstract Submitted
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An Experiment for a Precision Measurement of the Radiative Decay Spectrum of the Neutron R.L. COOPER, T.E. CHUPP, U. Michigan, K.J. COAKLEY, M.S. DEWEY, T.R. GENTILE, H.P. MUMM, J.S. NICO, A.K. THOMPSON, NIST, B.M. FISHER, I. KREMSKY, F.E. WIETFELDT, Tulane U., E.J. BEISE, K.G. KIRILUK, U. Maryland, J. BYRNE, U. Sussex — We have recently observed the radiative decay mode of the free neutron, in which a photon accompanies the usual beta decay products. Monte Carlo methods were used in the analysis of this observation, and these are being applied to optimize the apparatus for a precision measurement of the photon spectrum. The goal is to substantially increase the number of detected radiative decay events while better understanding the systematic effects. Increased statistical sensitivity is expected with a 12-element scintillation detector that is currently being constructed and modeled. These 12 independent channels for photon detection will allow a more thorough examination of our sources of background. Monte Carlo methods address subtle design issues regarding the charged particle detector and neutron transport. Direct photon detection with an avalanche photodiode as a potential photon detector will also be discussed.

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