

Abstract Submitted  
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**Precision measurement of the radiative beta decay of the free neutron** THOMAS GENTILE, NIST, RDK II COLLABORATION — A continuous spectrum of photons is emitted in the decay of the free neutron. We present the results of the RDK II experiment, in which radiative photons were detected in coincidence with the electrons and protons from neutron decay. The experiment was performed on the NG-6 fundamental physics neutron beam line at the National Institute of Standards and Technology Center for Neutron Research using two different photon detector arrays. An annular array of bismuth germanium oxide scintillators detected photons with energies between 14 keV and 782 keV and an array of large area avalanche photodiodes directly detected photons with energies between 0.4 keV and 14 keV . This experiment represents the first precision test of the shape of the photon energy spectrum from neutron radiative decay and a substantially improved determination of the branching ratio over a broad range of photon energies.

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