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New results on muon radiative decay¹ DINKO POCANIC, INPP, Univ. of Virginia, PIBETA COLLABORATION — The PIBETA and PEN experiments, a series of precise measurements of rare pion and muon decays at PSI, have acquired a substantial set of $\mu^+ \rightarrow e^+ \nu \bar{\nu} \gamma$, radiative muon decay (RMD), events. The measurements were made using a stopped pion beam decaying in an active target, and positron and photon detection in a segmented spherical pure-CsI electromagnetic shower calorimeter covering $\Delta \Omega \simeq 3\pi$ sr, with MWPC central tracking and particle identification. The present RMD study has resulted in approximately 30-fold improvement in the precision of the decay branching ratio for ($E_{\gamma} > 10$ MeV, and $\theta_{\gamma-e} > 30^{\circ}$), compared to previous work. Our 1% result is in excellent agreement with standard model theoretical predictions. Focusing on a narrower range of phase space, we were able to improve significantly the upper limit on the Michel paramter $\bar{\eta}$, which is sensitive to non-(V-A) admixtures in the weak lagrangian.

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