Abstract Submitted
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UCNA: A Measurement of the beta-asymmetry using Ultracold Neutrons (UCN) HENNING O. BACK, A.T. HOLLEY, R.W. PATTIE, A.R. YOUNG, NCSU, B. FILIPPONE, B. PLASTER, J. YUAN, Caltech, P. GELTENBORT, ILL, E. TATAR, ISU, T. BOWLES, R. HILL, G. HOGAN, M. MAKELA, C.L. MORRIS, A. SAUNDERS, LANL, R.R. MAMMEI, M. PITT, R.B. VOGELAAR, Virginia Tech, T.M. ITO, UTK, A. GARCIA, S. HOEDL, D. MELCONIAN, A. SALLASKA, S. SJUE, UW, J.W. MARTIN, U. of Winnipeg — A measurement of the correlation between the e^- momentum and n-spin (the beta-asymmetry) in n (neutron) beta-decay, together with the n lifetime, provides a method for extracting fundamental parameters for the charged-current weak interaction of the nucleon. In particular when combined with μ decay measurements, one can extract the V_{ud} element of the CKM matrix, a critical element in CKM unitarity tests. By using a new SD_2 super thermal source at LANSCE, large fluxes of UCN are expected for the UCNA project. These UCN will be 100% polarized using a 7T field, and directed into the beta spectrometer. This approach, together with an expected large reduction in backgrounds, will result in an order of magnitude reduction in the critical systematic corrections associated with current n beta-asymmetry measurements.

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