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**Improving the Precision of the UCNA Neutron Beta Asymmetry Experiment**[1] ALEXANDER SAUNDERS, Los Alamos Natl Lab, UCNA COLLABORATION — The UCNA experiment has published a measurement of the neutron beta decay asymmetry coefficient, A, with a total uncertainty of less than 1%, and is preparing the publication of a more recent data set with a total uncertainty expected to be about 0.5%. The experiment measures the correlation between decay beta particle emission direction and ultracold neutron spin as a function of the electron's energy. The leading sources of uncertainty in the most recent results are statistics, depolarization of the neutrons, missed backscatter of the electrons from insensitive layers of their detectors and the neutron storage trap, and energy loss of the electrons as they penetrate those same insensitive layers. We will present our progress on four efforts to reduce these sources of uncertainty in order to achieve a total uncertainty of about 0.35% in future UCNA results: a higher neutron decay rate in the experiment, improved depolarization monitoring techniques, and methods to better understand and control the electron backscatter and energy loss.

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