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Isospin breaking effects in radiative corrections to the axial charge in neutron beta decay

Precision searches in neutron beta decay have been at the inception and continued testing of the Standard Model, fueled in part by progress in electroweak radiative corrections. Recently, a substantial shift in the evaluation of the so-called γW box have caused a significant shift in V_{ud}, the up-down CKM matrix element, inspiring substantial additional research including radiative corrections to the weak axial charge. The latter is additionally a clean channel when looking for exotic right-handed currents by comparing to precision lattice QCD results. As additional electroweak radiative corrections can mimic New Physics, we have performed heavy-baryon effective field theory calculations and quantify the effects of explicit isospin symmetry breaking. We will present the current state of the art and report on progress and future paths.

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