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Neutrons and Fundamental Symmetries¹

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The scientific program of experiments employing cold neutron beams and stored ultracold neutrons for low-energy precision tests of fundamental symmetries is quite broad, spanning the fields of nuclear physics, particle physics, and cosmology. Although the experimental program is diverse, ranging from precision measurements of the lifetime and parity-violation in neutron beta-decay, to searches for time-reversal-violation in the static neutron, to searches for neutron-antineutron oscillations, the overarching goal common to all of these measurements is a high-precision test of the electroweak sector of the Standard Model. This presentation will outline the physics case for tests of fundamental symmetries with neutrons, highlight recent experimental progress in the field, and discuss the prospects for future improvements.

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