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## Nuclear radii and $V_{ud}$

Tests of CKM unitarity are a rigorous tool for constraining possible extensions of the Standard Model. The top-row CKM unitarity test–at the current precision level, a simpler two-flavor Cabibbo unitarity–relies on a combination of kaon, neutron and superallowed nuclear decays. The latter presently give the most precise value of  $V_{ud}$  and lead to an apparent 2-3 $\sigma$  unitarity deficit. Recent developments in the theory of superallowed nuclear  $\beta$  decays regarded the interplay of precise nuclear radii with  $V_{ud}$ . This connection involves Coulomb corrections, the isospin-breaking correction  $\delta_C$  and nuclear structure corrections:  $\delta_{NS}$  to  $\beta$  decay rates and nuclear polarization correction to charge radii in muonic atoms.

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