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## Isopin breaking study on lattice

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We investigate isopin breaking effects due to different masses and electric charges between up and down quarks non-perturbatively using lattice QCD+QED with domain wall quarks. Individual up, down, and strange quark masses are determined using  $K^\pm$ ,  $K^0$ , and  $\pi^\pm$  meson masses as inputs.

New challenges include calculations for the electromagnetic (EM) correction to the decay constants, introduction of the electric charge effect of sea quarks (full QCD+ full QED), and the disconnected loop diagram in the  $\pi^0$  propagator.

We employ QCD gauge ensembles using 2+1 flavors of domain wall fermions and the Iwasaki gauge action. These configurations have been generated by RBC and UKQCD collaborations.

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talk

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