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Nucleon strange electromagnetic form factors using $N_f = 2 + 1 + 1$ twisted-mass fermions at the physical point

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We present the strange electromagnetic form factors of the nucleon using lattice QCD with $N_f = 2 + 1 + 1$ twisted mass clover-improved fermions and quark masses tuned to their physical values. Using four ensembles with lattice spacings of $a = 0.080$ fm, 0.068 fm, 0.057 fm and 0.049 fm, and similar physical volume, we obtain the continuum limit directly at the physical point. The disconnected strange contributions are computed using high statistics two-point functions combined with stochastic noise mitigation techniques such as spin-color dilution and hierarchical probing in the estimation of the quark loop. Studying the momentum dependence of the form factors, we provide the strange electric and magnetic radii, as well as the strange magnetic moment in the continuum limit.

Parallel Session (for talks only)

Structure of hadrons and nuclei

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