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Isovector Axial Vector Form Factors of the Nucleon from Lattice QCD with $N_f = 2+1$ $\mathcal{O}(a)$-improved Wilson Fermions

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We present the analysis of isovector axial vector nucleon form factors for a set of $N_f = 2+1$ CLS ensembles with $\mathcal{O}(a)$-improved Wilson fermions and Lüscher-Weisz gauge action. The set of ensembles covers a pion mass range of $M_\pi = 130 - 353\,\mathrm{MeV}$ with lattice spacings between $a = 0.05 - 0.09\,\mathrm{fm}$. In particular, the ensemble list includes a 96^3 box ensemble at the physical pion mass. For the purpose of the form factor extraction, we employ both the summed operator insertion method (summation method) and explicit two-state fits in order to account for excited-state contributions to the nucleon correlation functions. As for the description of the Q^2-behavior of the form factors, we perform z-expansion fits. Finally, we present HBChPT-inspired chiral and continuum extrapolations of the data.

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