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Transverse densities of baryon resonances in chiral EFT — in progress

J. M. Alarcón,[1] C. Weiss,[2] A. N. Hiller Blin,[3] and U.-G. Meißner[1]

[1] *HISKP and Bonn University*

[2] *JLAB*

[3] *IFIC-CSIC-Universidad de Valencia*

Transverse densities describe the distribution of charge and current at fixed light-front time and provide a spatial representation of nucleons and resonances as relativistic systems. We study the transverse densities in the octet and decuplet baryons using relativistic chiral EFT with $SU(2)$ and $SU(3)$ flavor groups. Decuplet baryons are included in the EFT in the extended on-mass shell scheme, which permits consitent power counting. At peripheral distances $b = \mathcal{O}(M_\pi^{-1})$ the densities arise from soft-pion exchange between the baryon and the charge/current operator and become independent of the short-distance cutoff. We calculate the densities in the spin-1/2 octet ($L = 0, 1$) and spin-3/2 decuplet baryons ($L = 0, 1, 2, 3$) and interpret them in terms of the angular momentum of the peripheral pion. We demonstrate the relations between octet and decuplet densities emerging in the large-N_c limit of QCD. Our results provide model-independent insight into the peripheral structure of baryon resonances and can be compared with empirical densities and Lattice QCD calculations.