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Loop Corrections to Baryon Properties in Relativistic Chiral SU(3) Effective Theory MARSTON COPELAND, Clemson University, CHUENG-RYONG JI, North Carolina State University, WALLY MELNITCHOUK, Jefferson Lab — We calculate the pseudoscalar meson loop contributions to the properties of flavor SU(3) octet and decuplet baryons using a relativistic chiral effective theory framework consistent with Lorentz and gauge invariance. A finite range regularization prescription is applied and compared with dimensional regularization to show better convergence at higher meson masses. Renormalization prescriptions are discussed and renormalized expressions are fit to lattice QCD data. Results showing loop contributions to baryon masses, sigma terms, and flavor symmetries in parton distributions are presented. Results are also compared with previous heavy baryon (nonrelativistic) calculations in the literature.

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