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Nuclear axial current in chiral effective field theory

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We present the derivation of two-nucleon axial charge and current operators in chiral effective field theory up to order Q in the power counting, where Q denotes generically the low momentum scale. The derivation is based on time-ordered perturbation theory, and accounts for cancellations between the contributions of irreducible diagrams and those due to non-static corrections from energy denominators of reducible diagrams. Renormalized terms in the axial charge are obtained by isolating divergences in loop corrections via dimensional regularization, and reabsorbing them in a subset of the low-energy constants of contact operators entering the theory at order Q . The axial current contains no divergencies at order Q and also no contact terms at this order.

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