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Derivation of the singlet/doublet structure of the chiral electroweak fields. GENE MCCLELLAN, Applied Research Associates, Inc. — In the Standard Model of particle physics, the neutrino field and the left chiral component of the electron field compose a doublet related by an SU(2) transformation. The right chiral component of the electron field is a singlet with no counterpart neutrino field. This chiral asymmetry, fully supported by experiment, is an assumed rather than a derived feature of the Standard Model. We show a derivation of this asymmetry using straightforward techniques of Clifford algebra in an inertial laboratory frame having one temporal and four spatial dimensions. A parallel result is derived for the relationship between antineutrino and positron fields. These derivations hinge on representations of SU(2) in vector algebra.

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