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Magnetic correlations and magnetic order in the pyrochlore $Er_2Ti_2O_7$ S.H. CURNOE, Memorial University of Newfoundland, P. DALMAS DE RÉOTIER, A. YAOUANC, Y. CHAPUIS, B. GRENIER, E. RESSOUCHE, C. MARIN, Institut Nanosciences et Cryogenie, SPSMS, CEA and University Joseph Fourier, C. LAGO, Universidade del Pais Vasco, C. BAINES, Paul Scherrer Institute, S.R. GIBLIN, ISIS Facility, Rutherford Appleton Laboratory — We analyse short-range magnetic correlations in the pyrochlore magnet $Er_2Ti_2O_7$. Four unique nearest-neighbour exchange interactions are permitted by the space group symmetry of the pyrochlore lattice; the four corresponding nearest-neighbour exchange constants for $Er_2Ti_2O_7$ are extracted from diffuse neutron scattering maps. Low-temperature magnetic order in $Er_2Ti_2O_7$ is discussed in light of these results. The results are compared to recently published values for the sister compound $Yb_2Ti_2O_7$, which has similar features.

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