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***R*-Matrix Analysis of Particle Spectra from the $T(t,2n)\alpha$ Reaction at Low Energies¹** CARL R. BRUNE, Ohio University, JOSEPH A. CAGGIANO, DANIEL B. SAYRE, Lawrence Livermore National Laboratory, GERALD M. HALE, MARK W. PARIS, Los Alamos National Laboratory — The particle spectra from the low-energy $T(t,2n)\alpha$ reaction are of interest to several research areas, including fusion energy and the neutron-neutron scattering length. We present an *R*-Matrix model for the final states of this reaction, considering sequential neutron emission via $l = 0$ and 1 $n + \alpha$ intermediate states as well as emission of a correlated $l = 0$ $n + n$ (di-neutron) pair. The amplitudes for these processes are constructed to be antisymmetric under neutron exchange. The two-body $n + \alpha$ channel is highly constrained by existing experimental data. Substantial effects in the neutron and α -particle energy spectra are found to result from antisymmetrization as well as from the interference between different decay channels. Results for fits to the available experimental data will be presented.

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