A Note on the Decay Rates of $^3\text{H}_\Lambda$ and $^4\text{H}_\Lambda$.

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Summary. — The decay rates and two-body decay mode branching ratios of the hypernuclei $^3\text{H}_\Lambda$ and $^4\text{H}_\Lambda$ are calculated using separable potential model wave functions.

1. — Introduction.

In a previous contribution (1), we had analysed the decay rates of the $^3\text{H}_\Lambda$ and $^4\text{H}_\Lambda$ systems using the wave functions obtained from the separable-potential model. In obtaining the decay rates with the three-body model wave functions, we found that it was possible to evaluate the integrals only under certain approximations. We have since been able to evaluate the same without these approximations and it is gratifying to note that the results obtained in this case are very much better and lead us to conclude that the separable-potential model description of the $^3\text{H}_\Lambda$ and $^4\text{H}_\Lambda$ systems is indeed satisfactory. In this note we wish to report these later results and also wish to express our regret that some of the results in the earlier contribution were found to be erroneous. However the inadvertent errors had crept in only in the calculations with approximations, and these may safely be discarded in view of the results of the more accurate calculations that we present here. We therefore wish to point out that the value given in Tables I and II in this note are the final and corrected values obtained using the separable-potential model wave functions and parameters (2). As the method of calculating the decay rates has already been discussed (1) we analyse only the results of the calculations.

2. Discussion of results.

The experimentally measured quantities for the $^3\text{He}$ system are its lifetime \( T_\lambda \) (denoted by \( T_\lambda^3 = [\Gamma_\lambda^3]^{-1} = 0.9 \times 10^{-10} \text{ s} \)), and the branching ratio

\[
R_3 = \frac{\Gamma(3\text{He} \to \pi^- + ^3\text{He})}{\Gamma(3\text{He} \rightarrow \text{all } \pi^- \text{ modes})}.
\]