



is the most favoured one.

The decay structure of low-lying levels in ${}^9\text{Be}$ is discussed with regard to the $n + {}^8\text{Be}$ and $\alpha + {}^5\text{He}$ clustering; while the 2.43 MeV state decays preferably to the $\alpha + {}^5\text{He}_{g.s.}$, 3.03 MeV state shows purely $n + {}^8\text{Be}_{g.s.}$ decay structure. Decay properties of 4.70, 6.66 and 7.94 MeV levels are also studied.

4.3. Three-body break-up in the reaction $d + {}^7\text{Li} \rightarrow \alpha + \alpha + n$

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The reaction $d + {}^7\text{Li} \rightarrow \alpha + \alpha + n$ has been studied at deuteron bombarding energy $E_d = 180$ keV, with a target of natural lithium fluoride. The electronic set-up used is a standard slow-fast coincidence arrangement which enables a simultaneous measurement of $\alpha - \alpha$ and $\alpha - n$ coincidence.

The experimental results show an evidence of a sequential decay mechanism of the reaction, through the ${}^8\text{Be}$ first excited state (2.9 MeV) and the ground state of ${}^5\text{He}$. The coincidence spectra have been analyzed with the Breit-Wigner resonant term and the $\rho^1(E_{rel})$ density of states function of Phillips-Griffy-Biedenharn. However, in both cases the shape of the spectra can be reproduced only approximately. In order to approve the agreement between the experimental and theoretical curves, a contribution of the direct three-body break-up has to be included, with lower limit of 5%.

4.4. The effect of the quasifree scattering process on the shape of kinematically incomplete spectra at forward angles in the deuteron breakup*

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In the deuteron breakup the quasifree scattering (QFS) process appears alongside the final state interaction process (FSI) even at low incident energies. In the measurement of the $D(n, p) 2n$ reaction at forward angles with single counter, the proton spectra should include both the effects of $n-p$ and of $n-n$ QFS. The $n-n$ QFS effect on the spectra is limited to very low proton energies. The $n-p$ QFS effect at small proton angles of detection overlaps kinematically with the location of the enhancement due to the FSI.

We present a preliminary calculation of the proton spectrum which has been performed taking into account only the $n-p$ QFS in the $D(n, p) 2n$ reaction for $\Theta = 0^\circ$. A simple impulse approximation has been used at this stage. The result shows a marked maximum at high proton energies. The importance of the QFS effect for the extraction of the $n-n$ scattering length is discussed.

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