Table 11.14 from (2012KE01): Summary of ^{11}Li β-delayed particle emission measurements

(1974RO31): Measured $P_{\rm n}(^{11}{\rm Li})$, the neutron emission probability, relative to $P_{\rm n}(^{9}{\rm Li})$. Using $P_{\rm n}(^{9}{\rm Li}) = 50.8\%$ (2004TI06) gives $P_{\rm n}(^{11}{\rm Li}) = 88 \pm 10$ %. The original manuscript gives a lower value, $P_{\rm n} = 60.8 \pm 7.2$ %, based on $P_{\rm n}(^{9}{\rm Li}) = 35\%$ (1970CH07).
(1979AZ03): Measured the β-2n branching ratio using n-n coincidence counting. The singles neutron rate was 1.54 s^{-1} and the n-n coincidence rate was 0.0225 s^{-1}, using $P_{\rm n} > 95\%$ i.e. (1981BJ01) gives $P_{\rm 2n} > 13\%$. The text had used $P_{\rm n} = 60.8\%$ from (1974RO31) which gave a lower $P_{\rm 2n}$ value. The presently accepted value for $P_{\rm 2n}$ is smaller than these $P_{\rm 2n}$ values by more than a factor of two.
(1980AZ01): Measured $P_{\rm 3n}$ using n-n-n coincidence counting. The relative ratios were measured. $P_{\rm 2n}/P_{\rm 1n} = (4.8 \pm 0.5) \times 10^{-2}$ and $P_{\rm 3n}/P_{\rm 1n} = (2.2 \pm 0.2) \times 10^{-2}$. Using $P_{\rm n} = 95\%$ and $P_{\rm n} = \sum_i iP_{in}$ they found $P_{\rm 1n} = 82\pm7$ %, $P_{\rm 2n} = 3.9 \pm 0.5$ %, $P_{\rm 3n} = 1.8 \pm 0.2$ %. Note: the formula $P_{\rm n} = \sum_i P_{in}$ is used in some references.
(1980DE39): Measured $P_{^{11}{\rm Be}^*(0.32)} = 5.2 \pm 1.4$ % and $P_{^{10}{\rm Be}^*(3.32)} = 21 \pm 6$ % using β-γ counting; they deduced an upper limit of $\leq 2\%$ on population of the ^{11}Be ground state.
(1981BJ01): Measured $P_{^{11}{\rm Be}^*(0.32)} = 9.2 \pm 0.7$ % and $P_{^{10}{\rm Be}^*(3.32)} = 35 \pm 3$ % using β-γ counting. The rate of ^{11}B*(2.12) decay, fed from ^{11}Be decay, placed an upper limit of $\leq 2\%$ on population of the ^{11}Be ground state. Using $P_{^{11}{\rm Be}^*(0.32)}$ and the ratios from (1980AZ01), they deduced $P_{\rm 1n} = 85 \pm 1$, $P_{\rm 2n} = 4.1 \pm 0.4$, $P_{\rm 3n} = 1.9 \pm 0.2$ %, and using the correct formula, $P_{\rm n} = \sum_i iP_{in}$, they deduce $P_{\rm n} = 98 \pm 1$ %. From standard β-n counting they deduce a less precise value, $P_{\rm n} = 95 \pm 8$ %, but they note that a systematic error is present for multiple neutron emissions.
(1981LA11): Measured E and E-E coincident spectra for β-delayed charged particles using Si Detectors. They deduced: ^{11}Li $\rightarrow$ ^{11}Be*(≈ 18.5) $\rightarrow$ ^{8}Be*(3.0) + 3n $\rightarrow 2\alpha$ + 3n : 0.30 ± 0.05 %; ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ n + ^{10}Be*(9.4) $\rightarrow$ 2n + ^{9}Be*(2.43) $\rightarrow 2\alpha$ + 3n: 2.0 ± 0.6 %; ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ n + ^{10}Be*(9.4) $\rightarrow$ n + α + ^{6}He: 0.9 ± 0.3 %; Revised $P_{\rm 3n} = 2.3 \pm 0.6$ %, which implies $P_{\rm 1n} = 104 \pm 30$ % and $P_{\rm 2n} = 5.0 \pm 1.5$ % using the ratios from (1980AZ01).
(1984LA27): Using a single ΔE-E telescope they measured β-delayed charged particles. The lower level threshold was ~ 800 keV. They deduced: ^{11}Li $\rightarrow$ ^{11}Be*(≈ 18.5, $\Gamma \approx 0.5$ MeV) $\rightarrow$ ^{8}Li + t_0/t_1: 0.010 ± 0.004 %; ^{11}Li $\rightarrow$ ^{11}Be*(≈ 18.5) $\rightarrow$ ^{10}Be*(11.76) + n $\rightarrow$ n + α + ^{6}He: 0.10 ± 0.03 %; ^{11}Li $\rightarrow$ ^{11}Be*(≈ 18.5) $\rightarrow$ ^{10}Be*(11.76) + n $\rightarrow 2\alpha$ + 3n: 0.20 ± 0.05 %; ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ n + ^{10}Be*(9.4) $\rightarrow$ 2n + ^{9}Be*(2.43) $\rightarrow 2\alpha$ + 3n: 2.0 ± 0.6 %; ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ n + ^{10}Be*(9.4) $\rightarrow$ n + α + ^{6}He: 0.9 ± 0.3 %; ^{11}Li $\rightarrow$ ^{11}Be*(0-8.4 MeV): 97%.

Table 11.14 from (2012KE01): Summary of ^{11}Li β-delayed particle emission measurements (continued)

(1996MU19): Measured ΔE-E of emitted particles with an emphasis on β-d and β-t decays. The decay of subsequent daughters, implanted in the E detectors was also recorded. The lower level threshold was $\sim$ 500 keV. They found $P_{^8\mathrm{Li+t}} = (2.0 \pm 0.5) \times 10^{-2}$ % and $P_{^9\mathrm{Li+d}} \sim (1.5 \pm 0.5) \times 10^{-2}$ %.
(1997BO01): Using β-γ coincidence counting they measured $P_{^{11}\mathrm{Be}^*(0.32)} = 6.3 \pm 0.6$ % and using the ratios from (1980AZ01) they deduced: $P_{1\mathrm{n}} = 87.6 \pm 0.8$ %, $P_{2\mathrm{n}} = 4.2 \pm 0.4$ %, $P_{3\mathrm{n}} = 1.9 \pm 0.2$ %. This implies $P_{\mathrm{n}} = 101.7 \pm 1.3$ %.
(1997BO03): Measured β-delayed neutrons, charged particles and γ-rays with an emphasis on determining the branching ratios of the ^{11}Be*(18.15 ± 0.15 MeV) state. $d +^9$ Li : 20%, ^{10}Be(2^+) + n : 19%, ^{9}Be + 2n :$\leq$ 5%, n + α +^{6} He : 24%; $t +^8$ Li : 13%, ^{10}Be + n :$\leq$ 0.6%, 2α + 3n : 38%. They suggest that much of the d + ^{9}Li decay proceeds through the continuum.
(2005HI03): Using β-γ coincidence counting they measured $P_{^{11}\mathrm{Be}^*(0.32)} = 7.7 \pm 0.8$ %; implying $P_{1\mathrm{n}} = 86.3 \pm 0.9$ %, $P_{2\mathrm{n}} = 4.1 \pm 0.4$ %, $P_{3\mathrm{n}} = 1.9 \pm 0.2$ % and $P_{\mathrm{n}} = 100.3 \pm 1.4$ %.
(2008RA23, 2011RA16): Implanted ^{11}Li in Double-Sided-Si-Strip-Detector (DSSSD) and selected ^{9}Li + d decay events by measuring the subsequent ^{9}Li β-decay. They measured $P_{^9\mathrm{Li+d}} = (1.30 \pm 0.13) \times 10^{-2}$ % with an energy threshold of $E_{\mathrm{cm}} = 200$ keV. They further suggest that the β-d events proceed through the ^{11}Be*(18.2 MeV) state and through the continuum. Preliminary results from this measurement appear to have been given in (2007RAZS).
(2008MA34): Implanted ^{11}Li in DSSSD and selected on subsequent daughter decays. They measured $P_{^8\mathrm{Li+t}} = 0.014 \pm 0.003$ % (improved to $(0.93 \pm 0.08) \times 10^{-2}$ % in (2009MA72)) and further suggest: ^{11}Li $\rightarrow$ ^{11}Be*(18.15) $\rightarrow$ ^{6}He(2^+) + ^{5}He $\rightarrow$ 2α + 3n: 0.34 ± 0.05 %; ^{11}Li $\rightarrow$ ^{11}Be*(18.15) $\rightarrow$ α + ^{7}He $\rightarrow$ n + α + ^{6}He: 0.057 ± 0.009 %; ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ n + ^{10}Be*(9.5) $\rightarrow$ n + α + ^{6}He: 0.23 ± 0.04 %; ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ n + ^{10}Be*(9.5) $\rightarrow$ 3n + 2α: 1.1 ± 0.2 % (but part of the distribution is below their threshold); ^{11}Li $\rightarrow$ ^{11}Be*(10.59) $\rightarrow$ α + ^{7}He $\rightarrow$ n + α + ^{6}He: 0.035 ± 0.006 %. In (2009MA72) the values ^{11}Be*(18.35 ± 0.30 MeV, $\Gamma = 1.5 \pm 0.4$ MeV) are deduced.
(2009MA31): Implanted ^{11}Li in DSSSD and selected subsequent daughter decays corresponding to ^{7}He + α decay. Evidence for a previously unknown ^{11}Be state at $E_{\mathrm{x}} = 16.3$ MeV was observed. They deduced: ^{11}Li $\rightarrow$ ^{11}Be*(16.3 ± 0.1, $\Gamma = 0.7 \pm 0.1$ MeV) $\rightarrow$ ^{6}He + n + α: 0.006 ± 0.001 %; ^{11}Li $\rightarrow$ ^{11}Be*(16.3) $\rightarrow$ ^{6}He(2^+) + ^{5}He $\rightarrow$ 2α + 3n: 0.042 ± 0.007 %; ^{11}Li $\rightarrow$ ^{11}Be*(18.4 ± 0.3, $\Gamma = 1.6 \pm 0.6$ MeV) $\rightarrow$ ^{6}He + n + α: 0.020 ± 0.003 %.