Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 144, 297 (2017)	25-Aug-2017

S(n)=8590 *CA*; S(p)=2250 *SY*; Q(α)=9620 *SY*   2017Wa10,1997Mo25

S(n) from 1997Mo25. S(p) and Q(α) from 2017Wa10.

Estimated uncertainties (2017Wa10): 460 for S(p), 300 for Q(α).

S(2n)=15880 (theory,1997Mo25), S(2p)=3560 *410*, Q(εp)=2090 *410* (syst,2017Wa10).

1997He29 (also 1999He11): ^{258}Sg produced in ^{209}Bi(^{51}V,2n), E=4.77-4.99 MeV/nucleon. Nine fission events were observed at E(^{51}V)=4.91 MeV/nucleon, one each at 4.77 MeV/nucleon and 4.99 MeV/nucleon. The assignment to ^{258}Sg was made on the basis of similarity of the measured excitation function to the excitation function for ^{208}Pb(^{50}Ti,2n) reaction.

2009Fo02: ^{258}Sg produced in ^{208}Pb(^{52}Cr,2n),E=250-267 MeV at the 88-Inch Cyclotron of the Lawrence Berkeley Laboratory. Particles were detected using the Gas Separator (BGS) and a detector array consisting of 48 vertically position-sensitive strips. Measured half-life of ^{258}Sg decay, branching ratios, and production cross sections. Total of nine SF events were detected. No α decay events were observed.

Theoretical studies: consult the NSR database at www.nndc.bnl.gov for about 35 references dealing with theoretical calculations of half-lives for different decay modes, binding energies, fission characteristics, and other nuclear structure aspects.

Additional information 1.

^{258}Sg Levels

E(level)	J^{π}	$T_{1/2}$	Comments
0	0^+	2.5 ms +9−7	%SF=90 *10*; %$\alpha \leq$20 (2009Fo02,1997He29) Only the SF decay mode was observed by 2009Fo02 and 1997He29. No α decay was observed, with an upper limit of 20% in both 2009Fo02 and 1997He29. $T_{1/2}$: weighted average of 2.1 ms +*10*−6 (2009Fo02), 2.9 ms +*13*−7 (1997He29, also 1999He11) and 2.7 ms +*9*−7 (quoted by 2009Fo02 from Ph.D. thesis by J.B. Patin, University of California, Berkeley (2002)). Note that 2009Fo02 and J.B. Patin's thesis work are from the same laboratory (LBNL), but these are results from independent experiments using two different reactions to produce the activities: ^{208}Pb(^{52}Cr,2n)^{258}Sg in 2009Fo02 and ^{209}Bi(^{51}V,2n)^{258}Sg in J.B. Patin's thesis. Partial α decay half-life was calculated from semi-empirical formula by 1997Po18 as $T_{1/2}(\alpha)$=1.6 ms and by 1995KoZL as 20 ms. Eα=10310 keV and Eα=9590 keV were used by 1997Po18 and 1995KoZL, respectively. Q(α)=9620, recommended by 2017Wa10, gives Eα=9470 keV. Partial half-lives for ε decay and for SF decay were also calculated by 1995KoZL as $T_{1/2}(\varepsilon)$=10 s, $T_{1/2}$(SF)=4 ms. The calculated partial half-lives of 1995KoZL suggest %SF=87, %α=13, %ε=0.17. Production σ=0.04 nb +*10*−4 at E(^{52}Cr)=260.0 MeV, with one event; 0.15 nb +*7*−6 at E(^{52}Cr)=266.2 MeV, with eight events (2009Fo02).