^{259}Sg α decay 2009He20,2009Fo02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1041 (2013)	1-Nov-2011

Parent: ^{259}Sg: E=0.0; $T_{1/2}$=0.29 s *5*; Q(α)=9821 *10*; %α decay=9×10^{1} *1*

^{259}Sg-Q(α): From 2011AuZZ.

^{259}Sg-$T_{1/2}$: From Adopted Levels.

^{259}Sg-J^{π}=(1/2^{+}) or (11/2^{-}), from Adopted Levels. Analogy with ^{249}Cm and ^{251}Cf (N=153 nuclei) suggests 1/2^{+} 1/2(620) Nilsson single-particle state for ^{259}Sg g.s. However, a calculated energy (theory,1994Cw02) for the 11/2^{-} 11/2(725) Nilsson single-particle state suggests this state as the g.s. in ^{259}Sg.

^{259}Sg-%α decay: From 2009Fo02, 1985Mu11. %SF<20 (1985Mu11). Other: 1984De07.

Additional information 1.

2009He20: ^{259}Sg activity produced by ^{207}Pb(^{54}Cr,2n). Evaporation residues with energies of 35 to 60 MeV were separated from the primary beam by the velocity filter ship. Measured gamma rays using a Ge clover detector, emitted in prompt or delayed coincidence. Alpha particles were detected with position-sensitive Silicon detectors.

2009Fo02: ^{259}Sg activity produced by ^{208}Pb(^{52}Cr,N). Evaporation residues were identified using the Berkeley Gas-filled Separator (bgs). Alpha particles were detected with position-sensitive Silicon detectors.

1985Mu11: From ^{207}Pb(^{54}Cr,2n), E=4.90 MeV/nucleon; a total of 9 alpha-particle events were measured with position-sensitive Silicon surface barrier detectors, FWHM=32 keV.

^{255}Rf Levels

E(level)[†]
≈63
≈121
≈656

[†] Deduced from alpha-particle energies (2009He20) and Q(α)=9821 keV *10*.

α radiations

Total number of alpha particle detected is 33 (estimated by evaluators from Fig. 5 in 2009He20).

Eα[†]	E(level)	Iα[#@]	HF[‡]	Comments
9050	≈656	≈6	≈2.5	Iα: From 2 x 100/33 = 6 (See Fig. 5 in 2009He20). Eα: Eα=9030 keV, Iα≈11 from one event observed (1985Mu11).
9550	≈121	≈27	≈18	Iα: From 9 x 100/33 = 27 (See Fig. 5 in 2009He20). Eα: Eα=9360 keV, Iα≈11 from one event observed (1985Mu11).
9607	≈63	≈24	≈29	Iα: From 8 x 100/33 = 24 (See Fig. 5 in 2009He20). Eα: Eα=9620 keV *30*, Iα=78 *30* from 7 events observed (1985Mu11).

[†] From 2009He20.

[‡] r_0=1.46 (estimated by evaluators from 1998Ak04).

[#] About 39% of Iα have energies between 9100 and 9550 keV.

[@] For absolute intensity per 100 decays, multiply by 0.9 *1*.

^{259}Sg α decay 2009He20,2009Fo02 (continued)

$\gamma(^{255}Rf)$

E_γ	E_i(level)	E_f	Comments
593	≈656	≈63	Measured in prompt coincidence with 9050α (2009He20).

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Decay Scheme