Adopted Levels

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	25-Nov-2006

Q(β^-)=−5.3×10^3 *syst*; S(n)=7.5×10^3 *syst*; S(p)=3.6×10^3 *syst*; Q(α)=9.21×10^3 *syst* 2012Wa38

Note: Current evaluation has used the following Q record −5280 syst 7500 syst 3620 syst 9210 syst 2003Au03. Δ(Q(β^-))=400, Δ(S(n))=310, Δ(S(p))=330, Δ(Q(α))=200 (2003Au03).

2006Gr24: ^{264}Sg produced and identified in ^{238}U(^{30}Si,4n) reaction at E=148.7-173.1 MeV; $^{238}UF_4$ rotating target at 88-Inch cyclotron facility at LBNL; Berkeley gas-filled recoil separator (BGS) of the LBNL. Evaporation residues recoiling from the target were separated by the BGS from the beam and other reaction products on the basis of magnetic rigidities in He gas. Measured SF decay and half-life. A total of five SF events were assigned to the decay of ^{264}Sg. Assignment of these events to 4n channel is based on the fact that E^{30}Si=148.7 MeV energy is below the threshold for 6n channel and only 4.7 MeV above the 5n threshold.

2006Ni10: ^{264}Sg produced and identified in ^{238}U(^{30}Si,4n) at E=151.2 MeV. Rotating target wheel, SHIP-separator at GSI, position-sensitive Si strip (PIPS) detector, four Ge detectors for γ and x ray measurements, FWHM for α=25 keV. Four SF events assigned to ^{264}Sg. From three events, the half-life of 120 ms *+126−44* was deduced which is much longer than 37 ms *+27−11* reported by 2006Gr24, although the production cross sections are comparable in the two studies.

Others:

1998Ik02: ^{238}U(^{30}Si,4n) E=158 MeV. Fission fragment spectrum measured using JAERI-RMS separator and position sensitive Si strip detector, FWHM for α=80 keV. From two SF events, $T_{1/2}$= 54 s *+98−21* assigned to ^{264}Sg or ^{263}Db. From studies of 2006Gr24 and 2006Ni10, it is clear that 1998Ik02 did not observe ^{264}Sg, the fragments may be from ^{263}Db which has half-life of a few seconds.

1981Ba08: angular distribution of fission fragments following ^{232}Th(^{32}S,X) fusion reaction at E=218 MeV was measured, and from the observed anisotropy of 2.96, deformation parameter of β(2)=0.35 was deduced for compound nucleus ^{264}Sg.

For structure calculations and other theory references concerned ^{264}Sg, consult NSR database at www.nndc.bnl.gov.

^{264}Sg Levels

E(level)	J$^\pi$	$T_{1/2}$	Comments
0	0$^+$	37 ms *+27−11*	%SF≈100; %α<36 (2006Gr24) E(level): assumed as the ground state of even-even nucleus. No α decay was observed (2006Gr24), only an upper limit is assigned. $T_{1/2}$: SF decay half-life (2006Gr24) determined from analysis of five events assigned to SF decay. Other: 120 ms *+126−44* (2006Ni10, from three SF events). The value from 2006Gr24 is adopted here due to somewhat better statistics and from consistency with the systematic trend of measured partial fission half-lives for even-even Sg isotopes, as shown by 2006Gr24 in their figure 3. The half-life from 2006Ni10 will be an outlier in this figure. Partial α decay half-life>100 ms based on %α<36 (2006Gr24). $T_{1/2}$: calculations for α, ε and SF decays: 1978Po09, 1985Lo17, 1987Mo16, 1989Mo03, 1989St20, 1995KoZL, 1997Mo25, 1997Po18, 2001Mu11, 2005Xu01. Cross section for production=9 pb *+6−4* (2006Gr24) at excitation energy of the compound nucleus=39.3 MeV; 10 pb *+10−6* (2006Ni10) at excitation energy of 40 MeV. Energy of evaporation residues=6.34 to 8.08 MeV; total energy of SF decay=120 to 234 MeV.