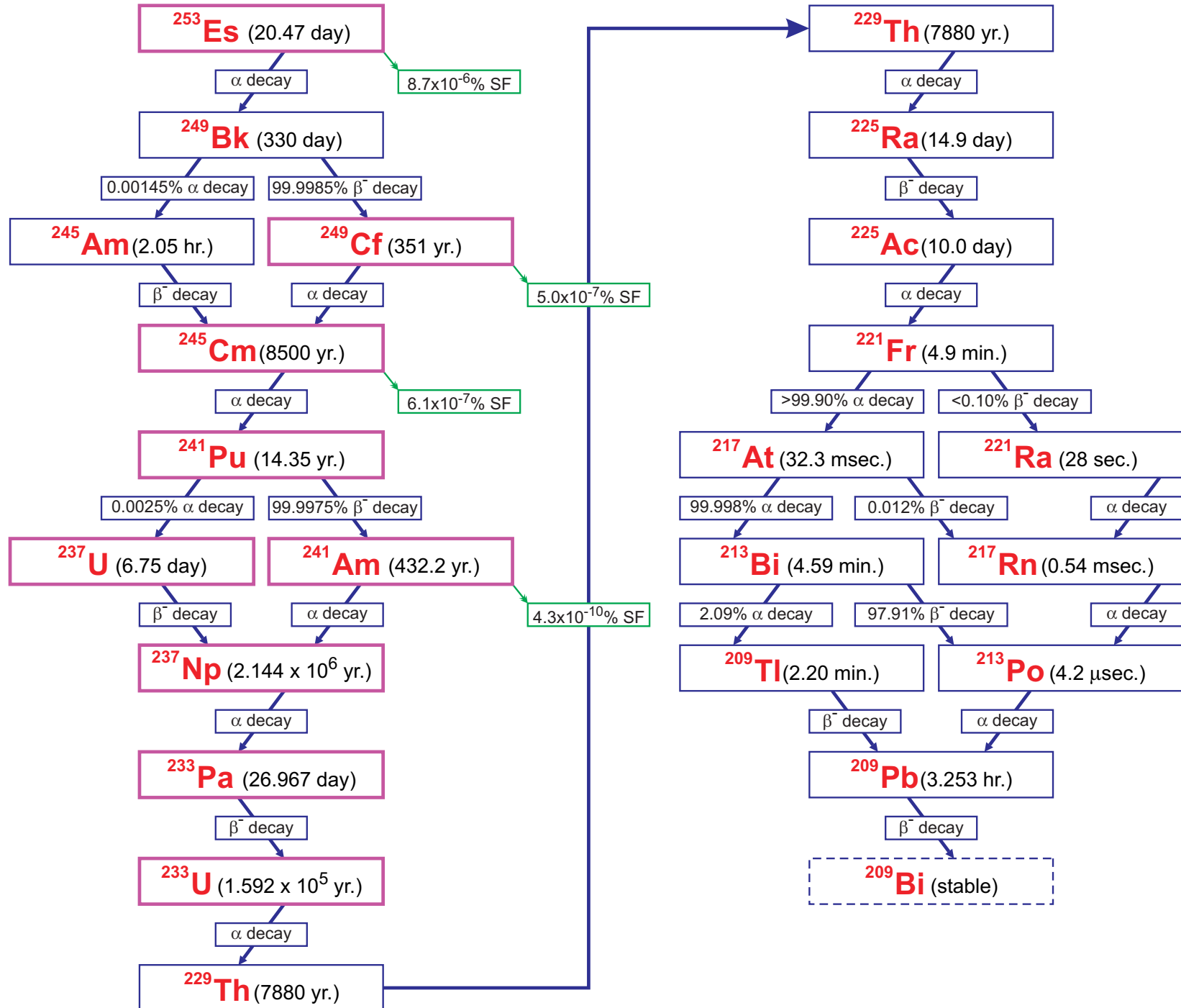
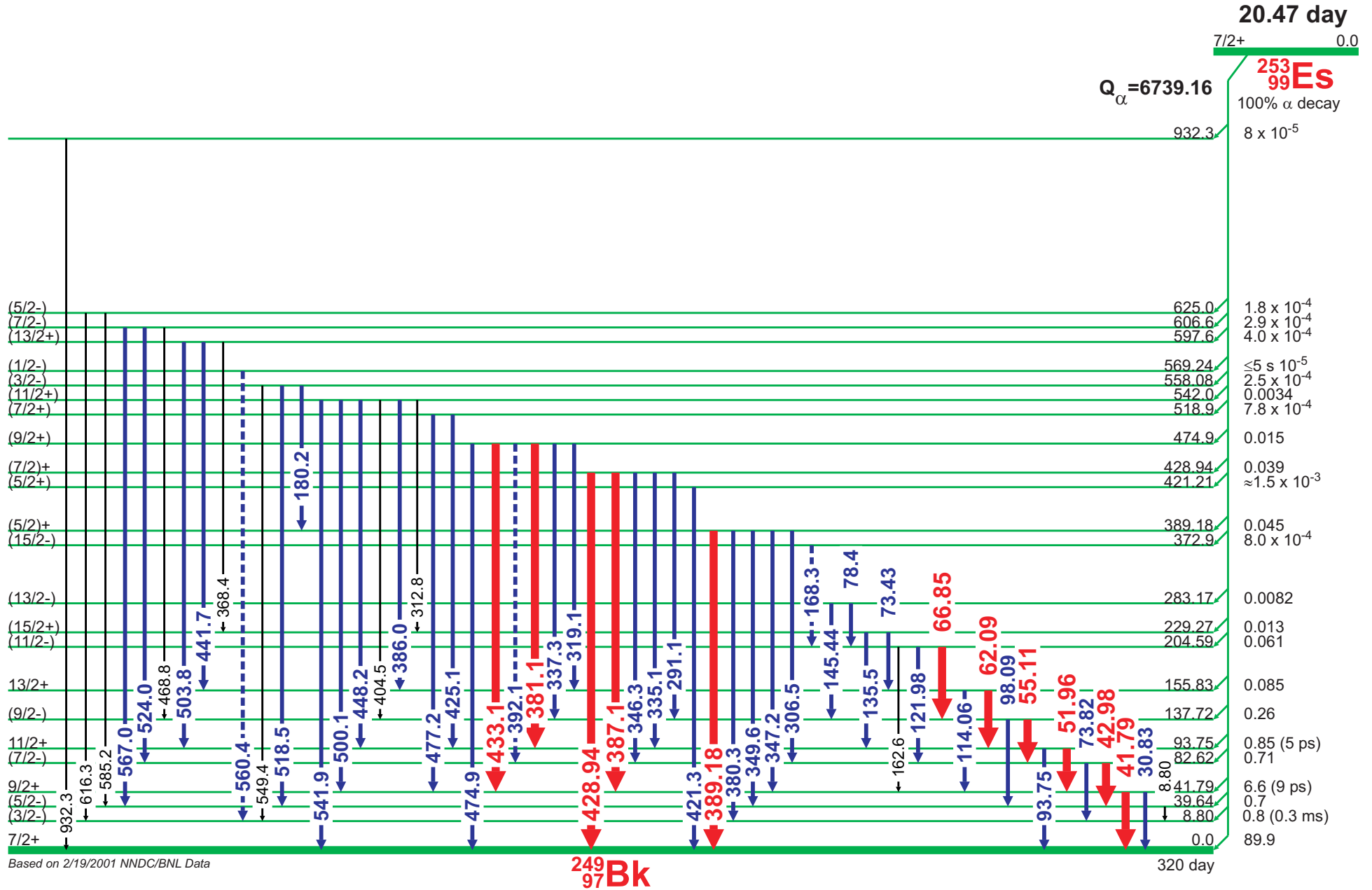


Simplified Decay Chain



²⁵³Es (20.47 day) Decay Scheme



GAMMA-RAY ENERGIES AND INTENSITIES (Page 1 of 2)

Nuclide: **²⁵³Es**E_γ, σE_γ, I_γ, σI_γ, Levels- from ENSDF Database as of February 19, 2001

Half Life: 20.47(3) day

| E _γ (keV) | σ E _γ | ① I _γ | ② σ I _γ | Level | |
|----------------------|------------------|------------------|--------------------|--------|---|
| 8.80 | | | | 8.80 | α |
| 30.83 | 0.02 | 0.003 20 | | 39.64 | α |
| 41.79 | 0.02 | | | 41.79 | α |
| 42.98 | 0.02 | 0.004 00 | | 82.62 | α |
| 51.96 | 0.02 | | | 93.75 | α |
| 55.11 | 0.02 | 0.002 50 | | 137.72 | α |
| 62.09 | 0.02 | 0.001 70 | ≈ | 155.83 | α |
| 66.85 | 0.04 | 0.000 97 | | 204.59 | α |
| 73.43 | 0.05 | 0.000 53 | 0.000 40 | 229.27 | α |
| 73.82 | 0.02 | 0.000 45 | | 82.62 | α |
| 74.7 | | 0.000 52 | | | α |
| 78.4 | 0.5 | 0.000 28 | | 283.17 | α |
| 84.6 | | 0.000 17 | | | α |
| 93.75 | 0.02 | 0.000 69 | | 93.75 | α |
| 98.09 | 0.02 | 0.000 97 | | 137.72 | α |
| 114.06 | 0.05 | 0.000 56 | ≈ | 155.83 | α |
| 121.98 | 0.03 | 0.000 67 | | 204.59 | α |
| 135.5 | 0.3 | 0.000 15 | | 229.27 | α |
| 145.44 | 0.05 | 0.000 28 | | 283.17 | α |
| 162.6 | | 0.000 014 | | 204.59 | α |
| 168.3 | | 0.000 052 | ≈ | 372.9 | α |
| 180.2 | | 0.000 014 | | 558.08 | α |
| 189.9 | | 0.000 006 0 | | | α |
| 283.4 | | 0.000 006 9 | | | α |
| 291.1 | | 0.000 035 | | 428.94 | α |
| 306.5 | | 0.000 027 | | 389.18 | α |
| 312.7 | | 0.000 004 | | | α |
| 312.8 | | 0.000 004 | 0.000 002 | 542.0 | α |
| 319.1 | | 0.000 037 | | 474.9 | α |
| 335.1 | | 0.000 149 | | 428.94 | α |
| 337.3 | | 0.000 054 | | 474.9 | α |
| 346.3 | | 0.000 172 | | 428.94 | α |
| 347.2 | | 0.000 180 | | 389.18 | α |
| 349.6 | | 0.000 140 | | 389.18 | α |

| E _γ (keV) | σ E _γ | ① I _γ | ② σ I _γ | Level | |
|----------------------|------------------|------------------|--------------------|--------|---|
| 368.4 | | 0.000 35 | | 597.6 | α |
| 380.3 | | 0.000 38 | 0.000 12 | 389.18 | α |
| 381.1 | | 0.005 55 | | 474.9 | α |
| 386.0 | | 0.001 30 | 0.000 50 | 542.0 | α |
| 387.1 | | 0.018 1 | | 428.94 | α |
| 389.18 | 0.04 | 0.026 40 | 0.000 30 | 389.18 | α |
| 392.1 | | 0.000 13 | 0.000 10 | 474.9 | α |
| 404.5 | | 0.000 005 6 | | 542.0 | α |
| 421.3 | | 0.000 106 | | 421.21 | α |
| 425.1 | | 0.000 242 | | 518.9 | α |
| 428.94 | 0.05 | 0.006 04 | | 428.94 | α |
| 433.1 | | 0.002 89 | | 474.9 | α |
| 441.7 | | 0.000085 | | 597.6 | α |
| 448.2 | | 0.000 695 | | 542.0 | α |
| 456.7 | | 0.000 017 | | | α |
| 468.8 | | 0.000 087 | | 606.6 | α |
| 474.9 | | 0.000 349 | | 474.9 | α |
| 477.2 | | 0.000 12 | | 518.9 | α |
| 487.7 | | 0.000 002 | | | α |
| 494.2 | | 0.000 007 | | | α |
| 500.1 | | 0.000 168 | | 542.0 | α |
| 503.8 | | 0.000 020 | | 597.6 | α |
| 514.4 | | 0.000 007 | | | α |
| 518.5 | | 0.000 11 | | 558.08 | α |
| 524.0 | | 0.000 057 | | 606.6 | α |
| 541.9 | | 0.000 024 | | 542.0 | α |
| 549.4 | | 0.000 032 | | 558.08 | α |
| 560.4 | | 0.000 040 | | 569.24 | α |
| 567.0 | | 0.000 051 | | 606.6 | α |
| 585.2 | | 0.000 037 | | 625.0 | α |
| 616.3 | | 0.000 004 2 | | 625.0 | α |
| 621.5 | | 0.000 001 7 | | | α |
| 653.0 | | 0.000 002 | | | α |
| 663.8 | | 0.000 003 5 | | | α |

① These I_γ are per 100 Decays of ²⁵³Es.

② Normalization factor is 0.00001, and its uncertainty is taken to be 0.0.



GAMMA-RAY ENERGIES AND INTENSITIES (Page 2 of 2)

Nuclide: **²⁵³Es**E_γ, σE_γ, I_γ, σI_γ, Levels- from ENSDF Database as of February 19, 2001

Half Life: 20.47(3) day

| E _γ (keV) | σ E _γ | ^① I _γ | ^② σ I _γ | Level | |
|----------------------|------------------|-----------------------------|-------------------------------|-------|---|
| 669.4 | | 0.000 004 9 | | | α |
| 761.9 | | 0.000 004 2 | | | α |
| 768.2 | | 0.000 029 | | | α |
| 900.2 | | 0.000 008 3 | | | α |
| 932.3 | | 0.000 046 | | 932.3 | α |

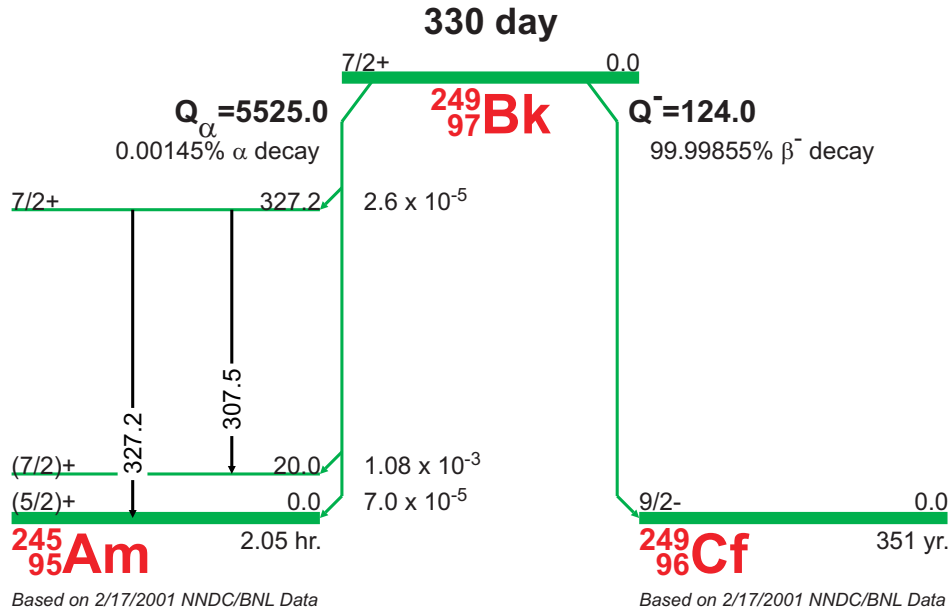
| E _γ (keV) | σ E _γ | ^① I _γ | ^② σ I _γ | Level | |
|----------------------|------------------|-----------------------------|-------------------------------|-------|---|
| 946.3 | | 0.000 007 6 | | | α |
| 1,040.4 | | 0.000 002 8 | | | α |
| 1,075.0 | | 0.000 005 2 | | | α |
| 1,106.4 | | 0.000 001 4 | | | α |
| 1,266.5 | | 0.000 016 | | | α |

① These I_γ are per 100 Decays of ²⁵³Es.

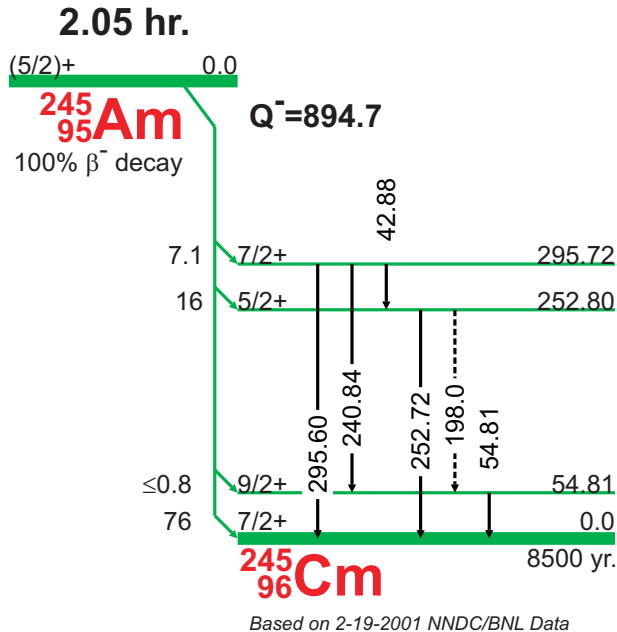
② Normalization factor is 0.00001, and its uncertainty is taken to be 0.0.



²⁴⁹Bk (330 day) Decay Scheme



²⁴⁵Am (2.05 hr.) Decay Scheme



GAMMA-RAY ENERGIES AND INTENSITIES

Nuclide: ²⁴⁹Bk

Half Life: 330(4) day

| E_{γ} (keV) | σE_{γ} | I_{γ} | σI_{γ} | Level | |
|--------------------|---------------------|--------------|---------------------|-------|----------|
| 307.5 | 1.0 | 0.000 003 2 | 0.000 000 9 | 327.2 | α |
| 327.2 | 0.5 | 0.000 017 | 0.000 003 | 327.2 | α |

E_{γ} σE_{γ} I_{γ} σI_{γ} Levels from ENSDF Database as of February 19, 2001

① These I_{γ} are per 100 Decays of ²⁴⁹Bk.

For ²²⁷Ac parent, multiply these values by 0.000 014 5

② For total uncertainty add 5.5% systematic component in quadrature, based on the normalization factor 0.0000145(8)

GAMMA-RAY ENERGIES AND INTENSITIES

Nuclide: ²⁴⁵Am

Half Life: 2.05(1) hr.

| E_{γ} (keV) | σE_{γ} | I_{γ} | σI_{γ} | Level | |
|--------------------|---------------------|--------------|---------------------|--------|-----------|
| 42.88 | 0.02 | 0.060 | calculated | 295.72 | β^- |
| 54.81 | 0.05 | | | 54.81 | β^- |
| 78 | | | | | β^- |
| 140 | 5 | | | | β^- |
| 153 | 5 | | | | β^- |
| 198.0 | 0.1 | 0.033 | calculated | 252.80 | β^- |
| 240.84 | 0.07 | 0.34 | 0.07 | 295.72 | β^- |
| 252.72 | 0.07 | 6.1 | | 252.80 | β^- |
| 295.60 | 0.15 | 0.22 | 0.07 | 295.72 | β^- |

E_{γ} σE_{γ} I_{γ} σI_{γ} Levels from ENSDF Database as of February 19, 2001

① These I_{γ} are per 100 Decays of ²⁴⁵Am.

② For total uncertainty add 9.8% systematic component in quadrature, based on the normalization factor 0.061(6)

