

⁷⁹Sr ε decay (2.25 min) 1982De36,1981Li12

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|--------------|---------------------|------------------------|
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Parent: ⁷⁹Sr: E=0.0; J^π=3/2⁽⁻⁾; T_{1/2}=2.25 min 10; Q(ε)=5326 9; %ε+%β⁺ decay=100.0

⁷⁹Sr-J^π,T_{1/2}: From ⁷⁹Sr Adopted Levels.

⁷⁹Sr-Q(ε): From 2012Wa38.

1982De36: measured γ, γγ, Xγ, βγ, T_{1/2}(⁷⁹Sr), Xγ(t), B(mass) coin, absolute I_γ, Q value.

1981Li12: γ, γγ, Xγ, βγ, T_{1/2}(⁷⁹Sr), Xγ(t), Q value.

Levels are reported up to 652 only even though Q(ε) is 5143. It is possible that γ rays of I_γ<3% are still unobserved, thus the β⁺ feedings and log ft values are considered tentative.

Others:

1981FrZY: measured βγ, T_{1/2}(⁷⁹Sr), 39 γ rays reported.

1980De13: measured γ, γγ, βγ, Q value.

1973BoXS: measured γ, T_{1/2}(⁷⁹Sr).

1972La32: measured γ, T_{1/2}(⁷⁹Sr).

1971Do01: measured γ, T_{1/2}(⁷⁹Sr). The 1.9 min activity with 3 γ rays was assigned incorrectly to ⁷⁹Rb decay. The results agree with ⁷⁹Sr decay.

1971Bi10: measured γ, T_{1/2}(⁷⁹Sr). The activity was probably incorrectly assigned to ⁷⁹Sr since T_{1/2}=8.1 min and energies of 7 γ rays disagree with other studies.

⁷⁹Rb Levels

| E(level) [#] | J ^π [‡] | T _{1/2} [†] | Comments |
|-----------------------|------------------------------------|-------------------------------|--|
| 0.0 | 5/2 ⁺ | | |
| 39.41 5 | (3/2 ⁻) | 20.5 ns 25 | T _{1/2} : average of 18 ns I (1982De36) and 23 ns I (1981Li12). |
| 144.41 5 | 3/2 ⁻ | <3 ns | |
| 174.28 8 | (5/2 ⁻) | <3 ns | |
| 285.33 7 | 1/2 ⁻ ,3/2 ⁻ | <3 ns | |
| 357.17 8 | (1/2,3/2,5/2) | <3 ns | Level proposed by 1982De36 only. |
| 363.42 7 | (5/2 ⁻) | <3 ns | |
| 452.8 1 | 1/2 ⁻ ,3/2 ⁻ | <3 ns | From 1982De36 only. |
| 651.75 13 | 1/2 ⁻ ,3/2 ⁻ | <3 ns | |

[†] From Xγ(t) (1982De36,1981Li12).

[‡] From Adopted Levels.

[#] From least-squares fit to E_γ data.

ε,β⁺ radiations

| E(decay) | E(level) | Iβ ⁺ [‡] | Iε [‡] | Log ft [†] | I(ε+β ⁺) ^{†‡} | Comments |
|----------|----------|------------------------------|-----------------|---------------------|------------------------------------|--|
| (4674 9) | 651.75 | ≈7 | ≈0.2 | ≈6.1 | ≈7 | av Eβ=1665.0 43; εK=0.02775 20; εL=0.003222 23; εM+=0.000680 5 |
| (4873 9) | 452.8 | ≈9 | ≈0.2 | ≈6.1 | ≈9 | av Eβ=1760.2 44; εK=0.02380 17; εL=0.002762 19; εM+=0.000583 4 |
| (4963 9) | 363.42 | ≈11 | ≈0.28 | ≈6.0 | ≈11 | av Eβ=1803.0 44; εK=0.02226 15; εL=0.002584 18; εM+=0.000545 4 |
| (4969 9) | 357.17 | ≈5 | ≈0.1 | ≈6.4 | ≈5 | E(decay): 4520 140 from Eβ+=3493 135 (B(219γ)) (1982De36). av Eβ=1806.0 44; εK=0.02216 15; εL=0.002572 18; εM+=0.000543 4 |
| (5041 9) | 285.33 | ≈5 | ≈0.1 | ≈6.4 | ≈5 | av Eβ=1840.4 44; εK=0.02103 14; εL=0.002441 16; εM+=0.000515 4 E(decay): 4970 110 from Eβ+=3952 104 (B(141γ)) (1981Li12). |

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⁷⁹Sr ε decay (2.25 min) **1982De36,1981Li12 (continued)**

ε,β⁺ radiations (continued)

| <u>E(decay)</u> | <u>E(level)</u> | <u>Iβ⁺ ‡</u> | <u>Iε ‡</u> | <u>Log ft †</u> | <u>I(ε+β⁺) †‡</u> | <u>Comments</u> |
|-----------------|-----------------|-------------------------|-------------|-----------------|------------------------------|--|
| (5152 9) | 174.28 | ≈3 | ≈0.07 | ≈6.7 | ≈3 | av Eβ=1893.8 44; εK=0.01943 13; εL=0.002255 15; εM+=0.000476 3 |
| (5182 9) | 144.41 | ≈16 | ≈0.35 | ≈6.0 | ≈16 | E(decay): 5090 120 from Eβ+=4065 120 (βγ) (1981Li12). av Eβ=1908.1 44; εK=0.01903 12; εL=0.002208 14; εM+=0.000466 3 |
| (5287 9) | 39.41 | ≈23 | ≈0.46 | ≈5.8 | ≈23 | E(decay): 4996 97 from Eβ+=3974 97 (B(105γ)) (1982De36). av Eβ=1958.6 44; εK=0.01770 11; εL=0.002053 13; εM+=0.000433 3 |
| (5326 9) | 0.0 | ≈21 | ≈0.41 | ≈5.9 | ≈21 | E(decay): 5070 160 from Eβ+=4050 156 (βγ) (1982De36). av Eβ=1977.6 44; εK=0.01723 11; εL=0.001999 13; εM+=0.000422 3 E(decay): 5020 210 from Eβ+=3996 209 (β mass coin) (1982De36). |

† Due to a large gap of ≈4.7 MeV between the highest (known) populated level at 652 and Q(ε)=5320, the ε+β⁺ feedings and associated log ft values are considered only as approximate values. There may be additional levels populated above 652, which have not been seen as yet.

‡ Absolute intensity per 100 decays.

γ(⁷⁹Rb)

I_γ normalization: from absolute intensity measurement (1982De36). The absolute intensity of the most intense γ ray was deduced by 1982De36 from measurement of number of flight events of ⁷⁹Sr (using tof method) and number of corresponding γ rays emitted.

| <u>E_γ †</u> | <u>I_γ ‡&</u> | <u>E_i(level)</u> | <u>J_i^π</u> | <u>E_f</u> | <u>J_f^π</u> | <u>Mult.</u> | <u>α[#]</u> | <u>Comments</u> |
|------------------------|-----------------------------|-----------------------------|------------------------------------|----------------------|------------------------------------|--------------|----------------------|--|
| 39.41 7 | 100 | 39.41 | (3/2 ⁻) | 0.0 | 5/2 ⁺ | (E1) | 1.443 | α(K)=1.270 19; α(L)=0.1471 22; α(M)=0.0239 4 α(N)=0.00256 4; α(O)=9.08×10 ⁻⁵ 14 Mult.: α(K)exp=1.54 7 (1982De36) allows E1 or M1 but ΔJ ^π supports E1. α(K)exp=4.1 3 given by 1981Li12 is probably in error (1982LiZZ). |
| 105.00 4 | 78 2 | 144.41 | 3/2 ⁻ | 39.41 | (3/2 ⁻) | (M1) | 0.1266 | α(K)=0.1116 16; α(L)=0.01261 18; α(M)=0.00209 3 α(N)=0.000235 4; α(O)=9.97×10 ⁻⁶ 14 Mult.: α(K)exp<0.12 (1982De36) gives M1 or E1 but ΔJ ^π supports M1. α(K)exp=0.56 24 given by 1981Li12 is probably in error (1982LiZZ). |
| 134.87 6 | 11 2 | 174.28 | (5/2 ⁻) | 39.41 | (3/2 ⁻) | | | |
| 140.92 8 | 16 2 | 285.33 | 1/2 ⁻ ,3/2 ⁻ | 144.41 | 3/2 ⁻ | | | |
| 144.41 6 | 11 5 | 144.41 | 3/2 ⁻ | 0.0 | 5/2 ⁺ | | | I _γ : average of I _γ =16 (1982De36) and I _γ =6 (1981Li12). |
| 167.43 @ 6 | 2 1 | 452.8 | 1/2 ⁻ ,3/2 ⁻ | 285.33 | 1/2 ⁻ ,3/2 ⁻ | | | |
| 218.98 8 | 21 3 | 363.42 | (5/2 ⁻) | 144.41 | 3/2 ⁻ | | | |
| 245.80 8 | 11 5 | 285.33 | 1/2 ⁻ ,3/2 ⁻ | 39.41 | (3/2 ⁻) | | | I _γ : average of I _γ =15 (1982De36) and I _γ =6 (1981Li12). |
| 308.9 @ 3 | 4.6 10 | 452.8 | 1/2 ⁻ ,3/2 ⁻ | 144.41 | 3/2 ⁻ | | | |
| 317.76 @ 6 | 18 3 | 357.17 | (1/2,3/2,5/2) | 39.41 | (3/2 ⁻) | | | |
| 324.03 6 | 19 3 | 363.42 | (5/2 ⁻) | 39.41 | (3/2 ⁻) | | | |

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^{79}Sr ε decay (2.25 min) 1982De36,1981Li12 (continued) $\gamma(^{79}\text{Rb})$ (continued)

| E_γ [†] | I_γ ^{‡&} | $E_i(\text{level})$ | J_i^π | E_f | J_f^π |
|-------------------------|------------------------------|---------------------|------------------------------------|--------|------------------------------------|
| 366.34 14 | 8 1 | 651.75 | 1/2 ⁻ ,3/2 ⁻ | 285.33 | 1/2 ⁻ ,3/2 ⁻ |
| 413.8 [@] 2 | 27 2 | 452.8 | 1/2 ⁻ ,3/2 ⁻ | 39.41 | (3/2 ⁻) |
| 612.5 [@] 2 | 17 2 | 651.75 | 1/2 ⁻ ,3/2 ⁻ | 39.41 | (3/2 ⁻) |

[†] Weighted average of 1982De36 and 1981Li12.

[‡] From 1982De36, unless otherwise stated. Values from 1981Li12 agree well.

[#] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr.

[@] Reported by 1982De36 only.

[&] For absolute intensity per 100 decays, multiply by 0.28 5.

^{79}Sr ϵ decay (2.25 min) 1982De36,1981Li12

