

⁴⁵Sc(p,γ): secondary γ's **1987Mo17**

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|-----------|------------------|------------------------|
| Full Evaluation | S. -c. Wu | NDS 91, 1 (2000) | 15-Jul-2000 |

E=1026 keV, 1047 keV, 1377 keV; measured γ, γ(θ) ([1987Mo17](#)).
 E=1.78,1.8 MeV; measured γ, γ(t) (DSA) ([1983Ra17](#));
 E=874-2963 ([1974Ra33](#)).
 E=1363-1377, 1645-1660; measured γ, γγ ([1968Er04](#)).
 E=874.6-1401.5 ([1963Du07](#)); measured 134 resonances corresponding to levels between 11205 and 11720; mean level spacing 3.7 keV; see [1963Du07](#) for details.
 E=1325-2475 ([1963Er01](#)); measured 37 resonances corresponding to levels between 11650 and 12770; see [1963Er01](#) for details.
 Others: [1994Za07](#), [1978So09](#).
 Decay scheme data are from [1987Mo17](#) at E(p)=1047 keV; additional data from [1968Er04](#).

⁴⁶Ti Levels

| E(level) [†] | Jπ [‡] | T _{1/2} [#] | Comments |
|-----------------------|------------------|-------------------------------|--|
| 0.0 | 0 ⁺ | | |
| 888.8 19 | 2 ⁺ | 1.4 ps +35-7 | |
| 2008.8 24 | 4 ⁺ | 1.5 ps 3 | |
| 2961 4 | 2 ⁺ | 166 fs 7 | |
| 3057 4 | 3 ⁻ | 2 ps +2-1 | |
| 3167.9 21 | 1 ⁻ | 191 fs +31-21 | |
| 3235.7 21 | 2 ⁺ | 29 fs +7-3 | |
| 3296 4 | 6 ⁺ | 0.97 ps 11 | |
| 3439 4 | 4 ⁻ | >2.2 ps | |
| 3451 8 | | | E(level): from 1968Er04 ; not in Adopted Levels. |
| 3568 4 | 3 ⁻ | 211 fs 24 | |
| 3570 4 | 0 ⁺ | 194 fs +17-14 | Additional information 1. |
| 3582 4 | | | Additional information 2. |
| 3721 3 | (2) ⁺ | 59 fs 4 | |
| 3827 8 | | | |
| 3844 8 | 2 ⁺ | 10 fs 4 | Additional information 3. |
| 3856 4 | | | |
| 3905.0 23 | | 38 fs +14-9 | Additional information 4. |
| 3940 4 | | | |
| 4040 4 | | | |
| 4137 8 | 2 ⁺ | | |
| 4198 7 | | | |
| 4417 | | | |
| 4519 4 | | | |
| 4530? | | | |
| 4698 4 | | | |
| 4827.2 25 | | | |
| 4982 10 | | | Not in Adopted Levels. |
| 5024 5 | | | |
| 5060 6 | | | E(level): from 1968Er04 ; not in Adopted Levels. |
| 5079 4 | | | |
| 5185 8 | | | |
| 5304 7 | | | E(level): from 1968Er04 ; not in Adopted Levels. |
| 5529 4 | 3 ⁻ | | |
| 5794 5 | | | |
| 5951 4 | | | |
| 6061 5 | | | Not in Adopted Levels. |
| 6080 | | | E(level): from 1968Er04 ; not in Adopted Levels. |
| 6261 8 | | | |

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$^{45}\text{Sc}(p,\gamma)$: secondary γ 's [1987Mo17](#) (continued)

^{46}Ti Levels (continued)

| <u>E(level)[†]</u> | <u>Comments</u> |
|-----------------------------|--|
| 6400 <i>10</i> | |
| 6522 8 | E(level): from 1968Er04 ; not in Adopted Levels. |

[†] Deduced by evaluator from a least-square fit assuming γ -ray energy uncertainties 3 keV for those observed in [1987Mo17](#), and 7 keV for those observed in [1968Er04](#).

[‡] From Adopted Levels.

[#] From [1983Ra17](#).

$\gamma(^{46}\text{Ti})$

| <u>$E_i(\text{level})$</u> | <u>J_i^π</u> | <u>E_γ^\dagger</u> | <u>I_γ^\ddagger</u> | <u>E_f</u> | <u>J_f^π</u> | <u>Comments</u> |
|---------------------------------------|-----------------------------|--------------------------------------|---------------------------------------|-------------------------|-----------------------------|---|
| 888.8 | 2 ⁺ | 889 | 100 | 0.0 | 0 ⁺ | |
| 2008.8 | 4 ⁺ | 1121 | 100 | 888.8 | 2 ⁺ | |
| 2961 | 2 ⁺ | 2073 | 100 | 888.8 | 2 ⁺ | |
| 3057 | 3 ⁻ | 1048 | 100 | 2008.8 | 4 ⁺ | |
| 3167.9 | 1 ⁻ | 2279 | 57 | 888.8 | 2 ⁺ | |
| | | 3168 | 43 | 0.0 | 0 ⁺ | |
| 3235.7 | 2 ⁺ | 2346 | 70 | 888.8 | 2 ⁺ | |
| | | 3235 | 30 | 0.0 | 0 ⁺ | |
| 3296 | 6 ⁺ | 1289 | 100 | 2008.8 | 4 ⁺ | |
| 3439 | 4 ⁻ | 382 | 100 | 3057 | 3 ⁻ | E_γ : from 1987Mo17 ; not observed in 1968Er04 . I_γ : intensity unknown from 1987Mo17 . |
| | | 1431 | | 2008.8 | 4 ⁺ | Assigned as 3454 to 2010 transition in 1968Er04 . |
| 3451 | | 394 | | 3057 | 3 ⁻ | E_γ : from 1968Er04 . |
| 3568 | 3 ⁻ | 1559 | 100 | 2008.8 | 4 ⁺ | |
| 3570 | 0 ⁺ | 2681 | 100 | 888.8 | 2 ⁺ | |
| 3582 | | 1573 | 98 | 2008.8 | 4 ⁺ | |
| | | 2691 | <2 | 888.8 | 2 ⁺ | |
| 3721 | (2) ⁺ | 1712 | 17 | 2008.8 | 4 ⁺ | |
| | | 2832 | 83 | 888.8 | 2 ⁺ | |
| 3827 | | 2938 | 100 | 888.8 | 2 ⁺ | |
| 3844 | 2 ⁺ | 2955 | 100 | 888.8 | 2 ⁺ | |
| 3856 | | 1847 | 100 | 2008.8 | 4 ⁺ | Unresolved from 1843 keV transition (1987Mo17). |
| 3905.0 | | 1895 | 12 | 2008.8 | 4 ⁺ | |
| | | 3016 | 37 | 888.8 | 2 ⁺ | |
| | | 3905 | 51 | 0.0 | 0 ⁺ | |
| 3940 | | 1931 | 100 | 2008.8 | 4 ⁺ | Assigned as the transition between 3950 and 2010 (1968Er04), evaluator (SCW) re-assigned the γ -ray to 3940 to 2010 transition; Unplaced in 1987Mo17 . |
| 4040 | | 985 | | 3057 | 3 ⁻ | E_γ, I_γ : from 1968Er04 . |
| | | 3151 | | 888.8 | 2 ⁺ | |
| 4137 | 2 ⁺ | 2128 [#] | 100 | 2008.8 | 4 ⁺ | Branching ratios reported at E(p)=1645-1660 keV disagree with those at E(p)=1362-1377 keV. |
| 4198 | | 1239 | 100 | 2961 | 2 ⁺ | |
| 4519 | | 1225 | 65 5 | 3296 | 6 ⁺ | E_γ, I_γ : from 1968Er04 ; transition unassigned in 1987Mo17 . |
| | | 1273 | 35 10 | 3235.7 | 2 ⁺ | E_γ, I_γ : from 1968Er04 . |
| 4698 | | 3809 | 100 | 888.8 | 2 ⁺ | |
| 4827.2 | | 1592 | 73 | 3235.7 | 2 ⁺ | |
| | | 1659 | 20 | 3167.9 | 1 ⁻ | |
| | | 2818 | 7 | 2008.8 | 4 ⁺ | |
| 4982 | | 1138 | | 3844 | 2 ⁺ | |

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$^{45}\text{Sc}(p,\gamma)$: secondary γ 's [1987Mo17](#) (continued) $\gamma(^{46}\text{Ti})$ (continued)

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | I_γ^\ddagger | E_f | J_f^π | Comments |
|---------------------|----------------|--------------------|---------------------|--------|------------------|---|
| 5024 | | 1728 | 100 | 3296 | 6 ⁺ | |
| 5060 | | 1339 | 40 | 3721 | (2) ⁺ | E_γ, I_γ : from 1968Er04 . |
| | | 1491 | 60 | 3570 | 0 ⁺ | E_γ, I_γ : from 1968Er04 . |
| 5079 | | 1843 | 100 | 3235.7 | 2 ⁺ | Unresolved from 1847 keV transition (1987Mo17). |
| 5185 | | 2128 [#] | 100 | 3057 | 3 ⁻ | |
| 5304 | | 3292 | 100 | 2008.8 | 4 ⁺ | E_γ, I_γ : from 1968Er04 . |
| 5529 | 3 ⁻ | 2230 | 60 | 3296 | 6 ⁺ | E_γ, I_γ : from 1968Er04 . |
| | | 2361 | 40 | 3167.9 | 1 ⁻ | E_γ, I_γ : from 1968Er04 . |
| 5794 | | 2224 | 100 | 3570 | 0 ⁺ | |
| 5951 | | 2715 | 100 | 3235.7 | 2 ⁺ | |
| 6061 | | 2479 | 100 | 3582 | | |
| 6080 | | 1665 | 1.0 2 | 4417 | | E_γ, I_γ : from 1968Er04 , per 100 capture at 1660 keV. |
| 6261 | | 2679 | 2.0 2 | 3582 | | E_γ, I_γ : from 1968Er04 , per 100 capture at 1660 keV. |
| 6400 | | 2203 | 1.7 3 | 4198 | | E_γ, I_γ : from 1968Er04 , per 100 capture at 1660 keV. |
| | | | | | | $E_\gamma=2205$ keV unplaced in 1987Mo17 . |
| 6522 | | 1216 | <0.1 | 5304 | | E_γ, I_γ : from 1968Er04 , per 100 capture at 1660 keV. |
| | | 2327 | 1.3 2 | 4198 | | E_γ, I_γ : from 1968Er04 , per 100 capture at 1660 keV. |

[†] ΔE for γ 's are better than 3 keV ([1987Mo17](#)).

[‡] From [1987Mo17](#) except as noted;

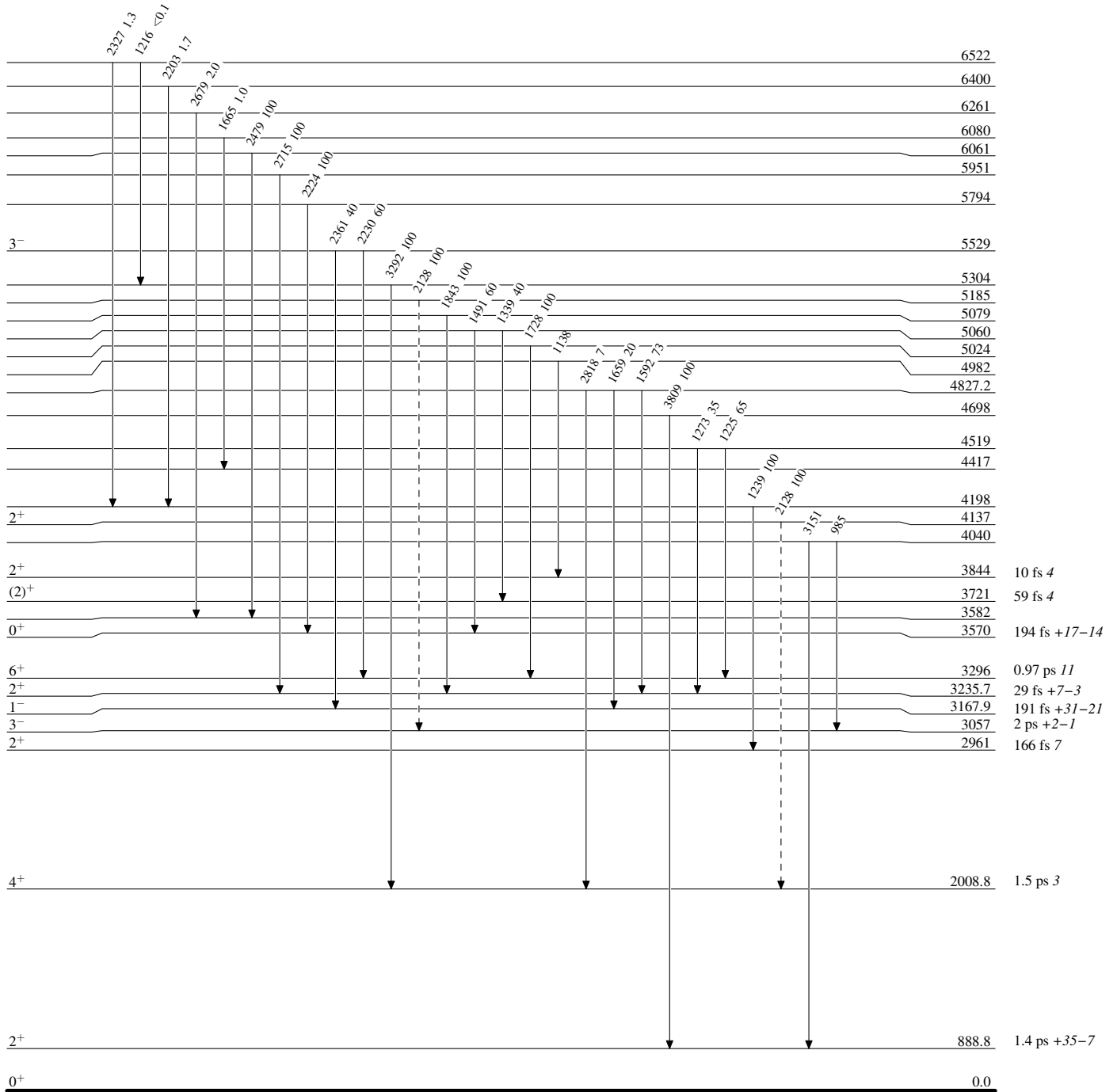
[#] Placement of transition in the level scheme is uncertain.

$^{45}\text{Sc}(p,\gamma)$: secondary γ 's 1987Mo17

Legend

Level Scheme

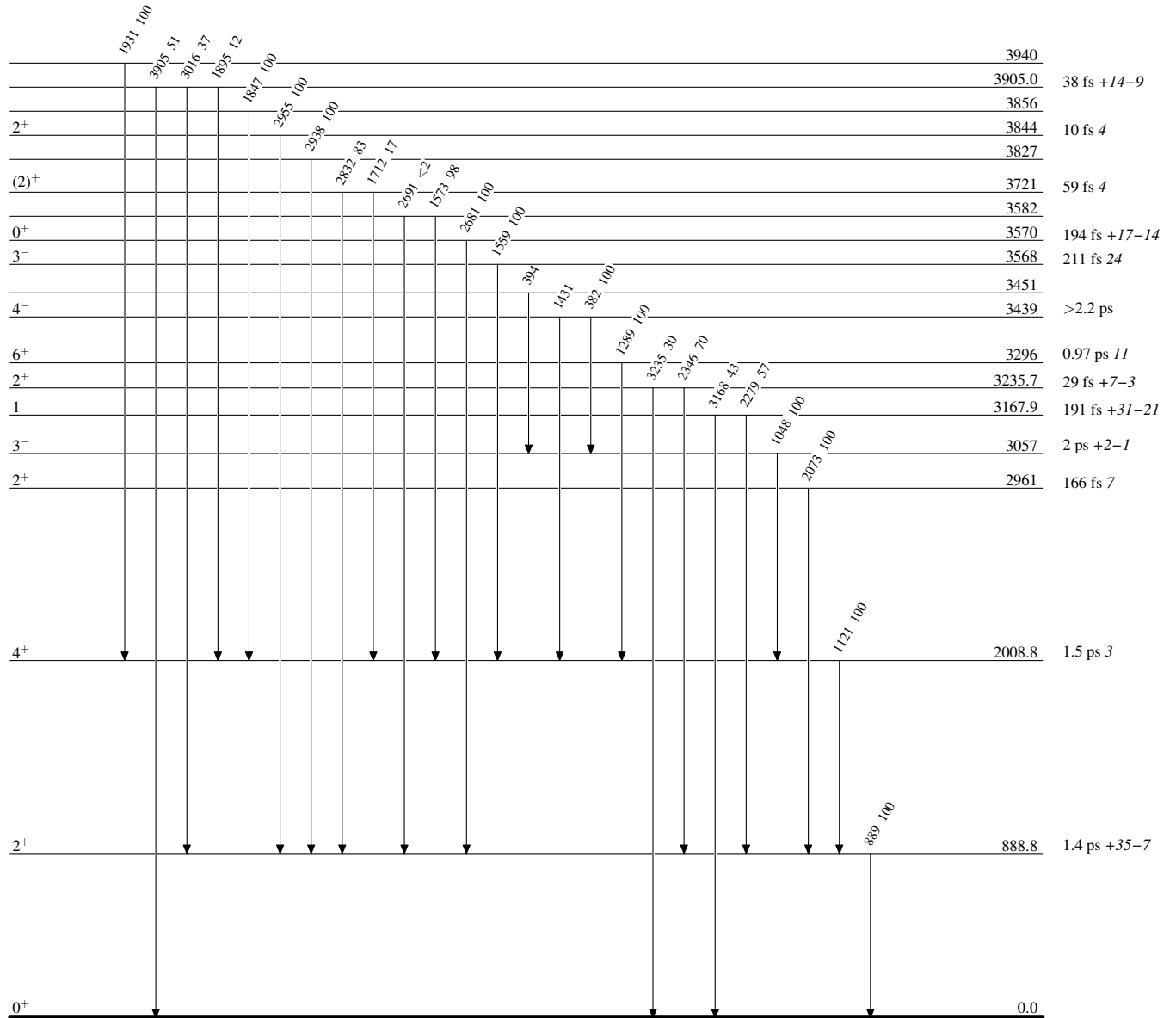
Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain) $^{46}\text{Ti}_{24}$

$^{45}\text{Sc}(p,\gamma)$: secondary γ 's 1987Mo17

Level Scheme (continued)

Intensities: Relative photon branching from each level

 $^{46}_{22}\text{Ti}_{24}$