Coulomb excitation 1976Tu02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 2391 (2012)	1-Sep-2012

Others: 1962Va20, 1964Al27, 1966Ga11, 1967Mc13, 1970Be02, 1970Di11.
^{115}In($\alpha,\alpha'\gamma$) E=9.4, 10.0, 10.6 MeV (1976Tu02), 8 MeV (1967Mc13), semi; 7-12 MeV (1966Ga11) scin.
^{115}In(^{16}O,^{16}Oγ) E=42,45 MeV (1976Tu02), 41-55 MeV (1970Di11), 40-50 MeV (1970Be02), 35 MeV (1967Mc13), semi.
1976Tu02 measured Eγ, Iγ, $\gamma(\theta)$, $\gamma\gamma$-coin, Doppler-broadened peak shape lifetimes.

^{115}In Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	$9/2^+$		
336.3	$1/2^-$		
597.2	$3/2^-$	≤0.25 ns	B(E3)=0.0057 *4* (1976Tu02). Other: 0.003 (1966Ga11).
941.4	$5/2^+$	15.1 ps *14*	$T_{1/2}$: from B(E2)=0.00272, Iγ(941γ)-branching=89.8%. Other:≥3.5 ps (1976Tu02) Doppler-line shape. Branching: Iγ(345γ)/Iγ(942γ)=0.114 *7* (1976Tu02), 0.15 (1970Di11). B(E2)=0.00272 *18* (1976Tu02). Others: 0.0027 *3* (1970Di11), 0.0023 *8* (1970Be02).
1077.7	$5/2^+$	0.86 ps *5*	$T_{1/2}$: 0.86 ps *5* from B(E2)=0.0227, Iγ(1078γ)-branching=83.7%. Others: 0.80 ps *14* (1974Er06) DSA, 0.90 ps *14* (1976Tu02) Doppler-line shape, 1.1 ps *2* (1977Ca14) res fluorescence. Branching: Iγ(136γ)/Iγ(480γ)/Iγ(1078γ)=1.2 *2*:18.7 *3*:100 (1976Tu02), –:23:100 (1970Di11). B(E2)=0.0227 *12* (1976Tu02). Others: 0.0220 *20* (1970Di11), 0.0151 *20* (1970Be02).
1132.5	$11/2^+$	0.065 ps *3*	$T_{1/2}$: res fluorescence: 0.065 ps *3* (1975Bo40), 0.064 ps *4* (1977Ca14), 0.072 ps *7* (1973Bo17), 0.075 ps *10* (1969Al19). Others: 0.07 ps *4* (1976Tu02) Doppler-line shape, 0.042 ps *14* (1974Er06) DSA, 0.075 ps *9* from B(E2)=0.100, δ(1132γ)=+0.51. B(E2)=0.100 *5* (1976Tu02). Others: 0.100 *11* (1970Di11), 0.108 *12* (1970Be02).
1290.8	$13/2^+$	0.38 ps *3*	$T_{1/2}$: 0.38 ps *3* from B(E2)=0.0565, Iγ(1291γ)-branching=97.6%. Others: 0.31 ps *7* (1974Er06) DSA, 0.38 ps *7* (1976Tu02) Doppler-line shape, 0.46 ps *4* (1977Ca14) res fluorescence. Branching: Iγ(158γ):Iγ(1290γ)=0.0246 *6* (1976Tu02), 0.0217 (1970Di11). B(E2)=0.0565 *30* (1976Tu02). Others: 0.050 *5* (1970Di11), 0.060 *9* (1970Be02).
1448.9	$9/2^+$	≈0.5 ps	$T_{1/2}$: 0.10 ps *+4–4* (1976Tu02) Doppler-line shape, 0.49 ps *3* from B(E2)=0.0151, Iγ(1449γ)-branching=86%, δ(1449γ)≈–8. Branching: Iγ(316γ):Iγ(1449γ)=0.163 *6* (1976Tu02),≈0.21 (1970Di11). B(E2)=0.0151 *10* (1976Tu02). Other: 0.0124 *20* (1970Di11).
1463.5	$7/2^+$		Branching: Iγ(386γ):Iγ(1463γ)=0.062 *5* (1976Tu02), 0.067 (1970Di11). B(E2)=0.0096 *13* (1976Tu02). Other: 0.0124 *30* (1970Di11).
1486.1	$9/2^+$	≈0.33 ps	$T_{1/2}$: 0.21 ps *14* (1976Tu02) Doppler-line shape, 0.33 ps *3* from B(E2)=0.0087, Iγ(1486γ)-branching=78.7%, δ(1486γ)≈–0.95. Branching: Iγ(353γ):Iγ(544γ):Iγ(1486γ)=22.4 *18*:4.7 *8*:100 (1976Tu02), 35:–:100 (1970Di11). B(E2)=0.0087 *9* (1976Tu02). Other: 0.0060 *15* (1970Di11).

[†] From 1970Di11 in agreement with Adopted Levels.

$\gamma(^{115}In)$

Doppler broadening of 1133-, 1464-level decays suggest mainly M1 deexcitation; broadening of 1078-, 1291-level decays are consistent with E2 deexcitation (1970Di11).

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	δ	α[‡]
336.3	$1/2^-$	336.3	100	0.0	$9/2^+$	M4		1.073 *14*
597.2	$3/2^-$	260.9	100	336.3	$1/2^-$	M1+E2	–0.09 *6*	0.0329 *1*

Continued on next page (footnotes at end of table)

Coulomb excitation 1976Tu02 (continued)

$\gamma(^{115}In)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	δ	α[‡]	Comments
941.4	$5/2^+$	344.2	11.4 *7*	597.2	$3/2^-$	[E1]			344$\gamma(\theta)$ A_2=−0.18 *7* (1976Tu02) indicates δ=−0.45 *30*.
		941.4	100	0.0	$9/2^+$	E2			941$\gamma(\theta)$ A_2=+0.03 *4* (1976Tu02).
1077.7	$5/2^+$	136.3	1.2 *2*	941.4	$5/2^+$	[M1]		0.22	136$\gamma(\theta)$ A_2=+0.10 *9* (1976Tu02) indicates δ=+0.07 *42*.
		480.5	18.7 *3*	597.2	$3/2^-$	[E1]			480$\gamma(\theta)$ A_2=−0.08 *2* (1976Tu02) indicates δ=−0.03 *5*.
		1077.7	100	0.0	$9/2^+$	E2			1078$\gamma(\theta)$ A_2=+0.03 *2* (1976Tu02).
1132.5	$11/2^+$	1132.5	100	0.0	$9/2^+$	M1+E2	+0.51 *4*		δ: +0.51 *4* (1977Kr13), weighted av of 1976Tu02, 1975Ro32, 1973Bo17, 1969Al19.
1290.8	$13/2^+$	158.2	2.46 *6*	1132.5	$11/2^+$	M1+E2	+0.02 *1*	0.1440 *1*	δ: from Adopted γ's. Other: +0.03 *5* from A_2=−0.09 *4* (1976Tu02) 158$\gamma(\theta)$.
		1290.8	100	0.0	$9/2^+$	E2			1291$\gamma(\theta)$ A_2=+0.16 *2* (1976Tu02).
1448.9	$9/2^+$	316.4	16.3 *6*	1132.5	$11/2^+$	M1		0.023	δ: A_2=+0.10 *8* (1976Tu02) 316$\gamma(\theta)$.
		1448.9	100	0.0	$9/2^+$	M1+E2	≈−8		δ: −8 *+7*−∞ from A_2=0.10 *5* (1976Tu02) 1449$\gamma(\theta)$.
1463.5	$7/2^+$	385.8	6.2 *5*	1077.7	$5/2^+$	M1+E2	≈−0.05	0.014	
		1463.5	100	0.0	$9/2^+$	M1+E2	−0.31 *7*		δ: from B(E2)=0.0096 *13*, $T_{1/2}$=0.059 ps *15*, Iγ(1463γ)-branching=94.2%. Other: −0.30 *+15−35* from A_2=−0.08 *7* (1976Tu02) 1463$\gamma(\theta)$.
1486.1	$9/2^+$	353.6	22.4 *18*	1132.5	$11/2^+$	M1+E2	+0.8 *6*	0.018 *1*	δ: from A_2=+0.26 *13* (1976Tu02) 353$\gamma(\theta)$.
		544.7	4.7 *8*	941.4	$5/2^+$	E2			
		1486.1	100	0.0	$9/2^+$	M1+E2	≈−0.95		δ: from A_2=+0.06 *6* (1976Tu02) 1486$\gamma(\theta)$.

[†] From 1976Tu02.
[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

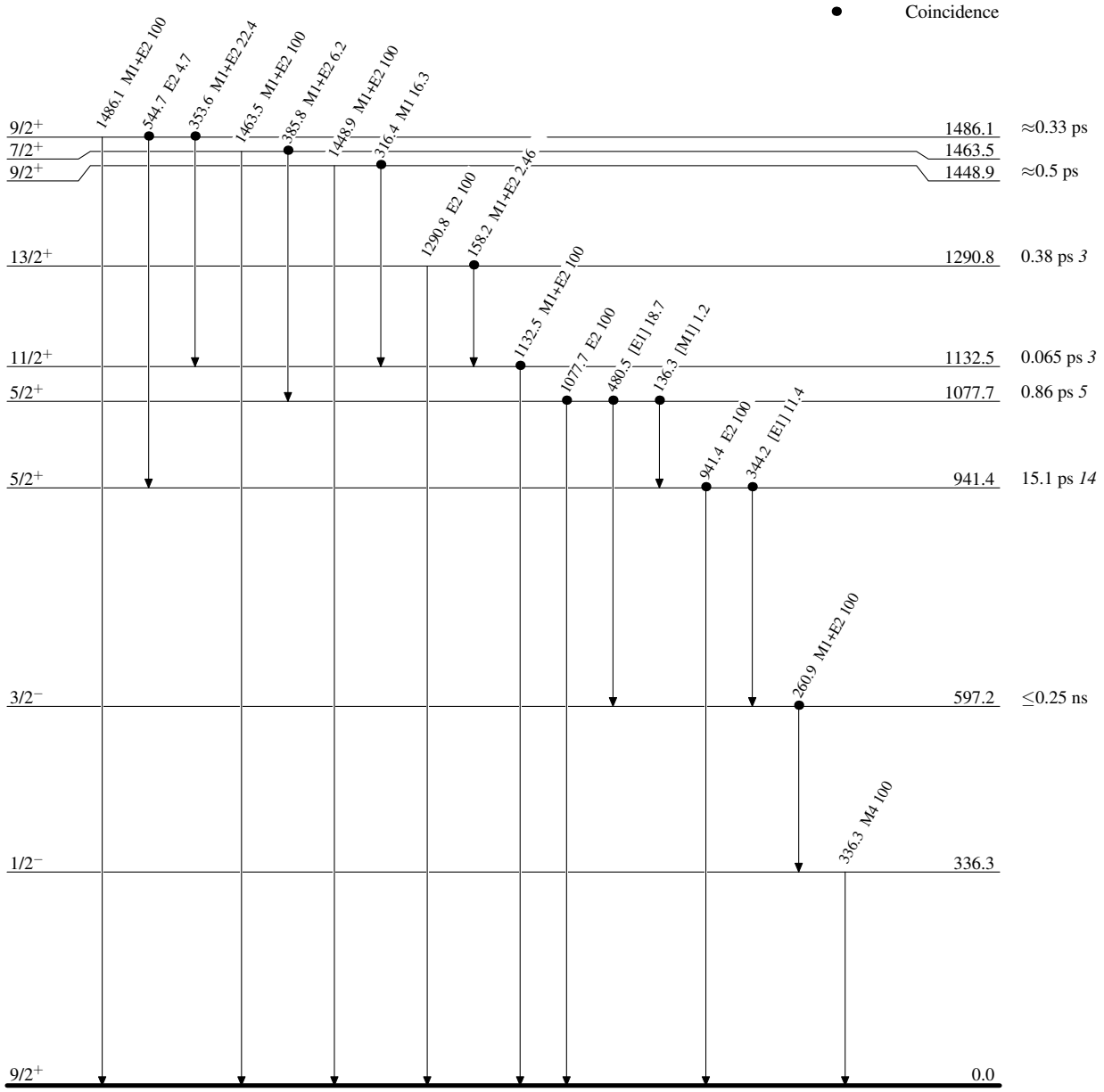
Coulomb excitation 1976Tu02

Legend

Level Scheme

Intensities: Relative photon branching from each level

● Coincidence



$^{115}_{49}In_{66}$