$^{16}O(^{82}Se,p2n\gamma)$ 2005Bu08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, G. Mukherjee, A. A. Sonzogni	NDS 111, 2555 (2010)	30-Jun-2009

2005Bu08: performed preliminary experiment using $^{82}Se(^{16}O,p2n\gamma)$ reaction at E(^{16}O)=48 MeV and three HPGe detectors, one planar Ge detector, ΔE-E Si detectors for charged particles and scintillation detectors for neutrons. Measured γ, $\gamma\gamma$, nγ coin, pγ coin.

2005Bu08: also performed inverse kinematic reaction using E(^{82}Se)=470 MeV. Target= ^{16}O present as contaminant in the Ta target foil. Measured Eγ, Iγ, $\gamma\gamma\gamma$, nγ coin, $\gamma(\theta)$, $\gamma\gamma(\theta)$(DCO) using GASP array consisting of 40 HPGe detectors and 74 BGO detectors as a multiplicity filter, neutron detectors.

^{95}Nb Levels

Observed levels compared with spherical shell-model calculations and systematics of high-spin states in this mass region.

E(level)	J^{π}‡	$T_{1/2}$	E(level)	J^{π}‡	E(level)
0	$9/2^+$	34.991 d *6*	2522.0?† *4*	$(21/2^+)$	5643.4?†# *6*
824.70# *20*	$(13/2^+)$		3198.3# *4*	$(25/2^+)$	6487.7# *6*
1649.4# *3*	$(17/2^+)$		4070.9?†# *5*	$(29/2^+)$	7493.3# *7*
2328.4# *3*	$(21/2^+)$		5140.0# *5*	$(33/2^+)$	8695.2# *7*

† Level energy is uncertain due to ambiguous ordering of the γ rays involved in the cascade.
‡ From DCO and ADO ratios of de-excited γ rays assuming lowest transition in the cascade as stretched E2.
# Band(A): Cascade based on g.s..

$\gamma(^{95}Nb)$

DCO ratios correspond to data at angles 90° and 34° or 146°, the gating transitions were ΔJ=2, quadrupole. The value of DCO is expected as ≈1.0 for ΔJ=2, stretched quadrupole and ≈0.5 for stretched ΔJ=1, dipole transitions.

R(ADO) are ratios of the intensities of γ rays observed in the rings of the detectors at 34°+146° and at 90°. The value of R(ADO) is expected as ≈1.3 for ΔJ=2, stretched quadrupole and ≈0.7 for stretched ΔJ=1, dipole transitions.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
503.4† *2*	18 *3*	5643.4?		5140.0	$(33/2^+)$	DCO=0.97 *17* R(ADO)=0.96 *28*.
676.2† *3*	6.0 *26*	3198.3	$(25/2^+)$	2522.0?	$(21/2^+)$	
679.0 *2*	40 *4*	2328.4	$(21/2^+)$	1649.4	$(17/2^+)$	DCO=1.13 *18* R(ADO)=1.03 *18*.
824.7‡ *2*	50‡ *6*	824.70	$(13/2^+)$	0	$9/2^+$	R(ADO)=1.18 *8* for doublet.
824.7‡ *2*	50‡ *6*	1649.4	$(17/2^+)$	824.70	$(13/2^+)$	
844.3† *3*	16 *3*	6487.7		5643.4?		R(ADO)=1.31 *24*.
869.9 *2*	35 *4*	3198.3	$(25/2^+)$	2328.4	$(21/2^+)$	DCO=1.2 *3* R(ADO)=1.33 *12*.
872.6‡† *3*	≈6‡	2522.0?	$(21/2^+)$	1649.4	$(17/2^+)$	
872.6‡† *3*	22‡ *3*	4070.9?	$(29/2^+)$	3198.3	$(25/2^+)$	DCO=1.07 *13* Placement shown as $(33/2^+)$ to $(29/2^+)$ in table I of 2005Bu08 but $(29/2^+)$ to $(25/2^+)$ in authors′ figure 5. Note that ordering of the 1069.1-872.6 cascade is not established.

Continued on next page (footnotes at end of table)

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$\gamma(^{95}Nb)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
1005.6 *3*	12.1 *24*	7493.3		6487.7		DCO=1.1 *4* R(ADO)=1.03 *17*.
1069.1† *2*	23 *3*	5140.0	$(33/2^+)$	4070.9?	$(29/2^+)$	DCO=1.14 *19* Placement shown as $(29/2^+)$ to $(25/2^+)$ in table I of 2005Bu08 but $(33/2^+)$ to $(29/2^+)$ in authors′ figure 5. Note that ordering of the 1069.1-872.6 cascade is not established. R(ADO)=1.26 *15*.
1201.9 *2*	7.4 *17*	8695.2		7493.3		

† Ordering of the 676.2-872.6, 1069.1-872.6 and 844.3-503.4 cascades is uncertain.
‡ Multiply placed with intensity suitably divided.

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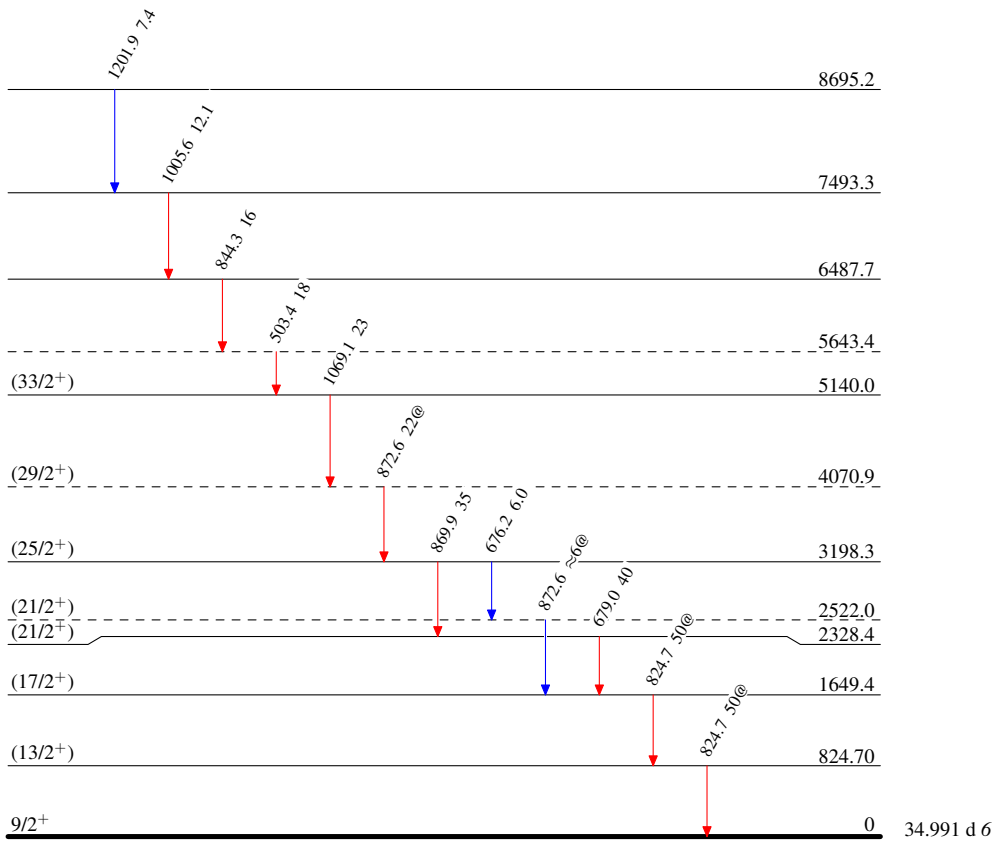
Level Scheme

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



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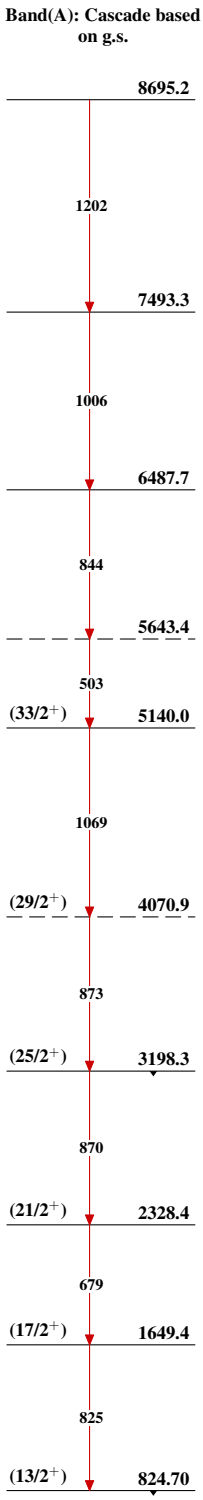

$^{95}_{41}Nb_{54}$