

$^{92}\text{Mo}(^{10}\text{B}, 3\text{npy})$ 2009FrZZ

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh		NDS 164, 1 (2020)	15-Feb-2020

2009FrZZ (also a presentation by C. Fransen available on a webpage

http://egp-workshop.in2p3.fr/docs/Talks-Mardi/fransen_paris.pdf): E=54 MeV ^{10}B beam was produced from the Cologne tandem accelerator. Target was 0.3 mg/cm^2 ^{92}Mo foil on a 4.9 mg/cm^2 gold backing. Measured recoil distance Doppler shift with the Cologne plunger. Deduced lifetimes, transition strengths for yrast states up to 8^+ . Low-spin states were studied using $^{96}\text{Ru}(^3\text{He}, \text{n})$ with $E(^3\text{He})=12.5 \text{ MeV}$. Measured $E\gamma$, $\gamma\gamma(\theta)$, Doppler-shift attenuation with the Cologne spectrometer. Deduced levels, J, π , lifetimes, transition strengths, γ -ray multipolarities, mixing ratios.

Results in 2009FrZZ are preliminary. Details of these measurements are not available.

[Additional information 1.](#)

 ^{98}Pd Levels

E(level) [†]	J π [#]	T _{1/2} [@]	Comments
0.0	0 ⁺		
862.9 1	2 ⁺	<11.3 ps	T _{1/2} : mean lifetime $\tau < 16.3 \text{ ps}$ (from B(E2)(W.u.) > 3.9 in the 2009FrZZ conference paper); $\tau < 15 \text{ ps}$ 1 (B(E2)(W.u.) > 4.2 3) listed in 2009FrZZ presentation. Due to contamination in the intensity of 862.9 γ , only an upper limit of lifetime could be determined by 2009FrZZ.
1541.4 1	4 ⁺	11.7 ps 21	T _{1/2} : mean lifetime $\tau = 16.9 \text{ ps}$ 30 (RDDS method, 2009FrZZ), value is preliminary and listed in the presentation.
1966.7	(2 ⁺)	<145 ^{&} fs	J π : (2 ⁺) from $\gamma\gamma(\theta)$ (2009FrZZ), but no details available. T _{1/2} : effective mean lifetime $\tau = 179 \text{ fs}$ 30 from DSAM (2009FrZZ). Possible fragment of one-phonon mixed symmetry state (2009FrZZ), based on large M1 transition strength for γ to first 2 ⁺ state.
2112.5 1	6 ⁺	19.3 ps 14	T _{1/2} : mean lifetime $\tau = 27.8 \text{ ps}$ 20 (RDDS method, 2009FrZZ), value is preliminary and listed in the presentation.
2222.2 [‡]	(2 ⁺)	<90 ^{&} fs	J π : (2 ⁺) proposed, but 3,4 ⁺ are not ruled out in 2009FrZZ. T _{1/2} : effective mean lifetime $\tau = 100 \text{ fs}$ 30 from DSAM (2009FrZZ). Possible fragment of one-phonon mixed symmetry state (2009FrZZ), based on large M1 transition strength for γ to first 2 ⁺ state.
2300.2 [‡]			
2700.8 [‡]			
2773.3 1	8 ⁺	66.3 ps 14	T _{1/2} : mean lifetime $\tau = 95.6 \text{ ps}$ 20 (RDDS method, 2009FrZZ), value is preliminary and listed in the presentation.
2863.5 [‡]			
3301.4 [‡]			

[†] From 2009FrZZ.

[‡] New low-spin (probably ≤ 4) level from 2009FrZZ, populated in $^{96}\text{Ru}(^3\text{He}, \text{n})$, but no γ rays were reported in the conference report by 2009FrZZ.

[#] From Adopted Levels.

[@] From RDDS method in 2009FrZZ, unless otherwise noted. Values of lifetimes are listed in their presentation but not in the conference report. Quoted values are preliminary (2009FrZZ).

[&] From DSAM in 2009FrZZ using $^{96}\text{Ru}(^3\text{He}, \text{n})$ reaction. Values are preliminary (2009FrZZ).

$^{92}\text{Mo}(^{10}\text{B},3\text{np}\gamma)$ **2009FrZZ (continued)** $\gamma(^{98}\text{Pd})$

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	δ	Comments
571.1	2112.5	6 ⁺	1541.4	4 ⁺	E2		Additional information 5.
660.8	2773.3	8 ⁺	2112.5	6 ⁺	E2		Additional information 8.
678.5	1541.4	4 ⁺	862.9	2 ⁺	E2		Additional information 3.
862.9	862.9	2 ⁺	0.0	0 ⁺	E2		Additional information 2.
1103.8	1966.7	(2 ⁺)	862.9	2 ⁺	(M1+E2)	-0.26 10	Mult., δ : from $\gamma\gamma(\theta)$ (2009FrZZ). Additional information 4.
1359.3	2222.2	(2 ⁺)	862.9	2 ⁺	(M1+E2)	+0.15 9	Mult., δ : from $\gamma\gamma(\theta)$ (2009FrZZ) for J(2222)=2. Additional information 6.
2222.2 [#]	2222.2	(2 ⁺)	0.0	0 ⁺			I_γ : <8.1% of the intensity of γ to the first 2 ⁺ state. Additional information 7.

[†] From level-energy difference, observed in [2009FrZZ](#) but no E_γ values reported.

[‡] From Adopted Gammas, unless otherwise noted.

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

 $^{92}\text{Mo}(^{10}\text{B},3\text{np}\gamma)$ **2009FrZZ**

Legend

Level Scheme-----► γ Decay (Uncertain)