^{96}Zr(^{40}Ca,^{42}Caγ) 2007Sz05,2011Co14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen[#] and Balraj Singh	NDS 135, 1 (2016)	31-May-2016

Includes ^{208}Pb(^{40}Ca,^{42}Ca) from 2007Co21 (also 2005Co25, 2004Sz05).
Levels in ^{42}Ca populated by 2n transfer channel.
2007Sz05: E=152 MeV ^{40}Ca beam was produced at the LNL Tandem. Target of 99.9% enriched ^{96}Zr in oxide form with a thickness of 150 μg/cm^2 on a 20 μg/cm^2 carbon backing. Projectile-like products were selected with the magnetic spectrometer PRISMA and γ-rays were detected with the CLARA array of 24 HPGe clover-type detectors.
2011Co14: the level scheme is further analyzed and discussed.
2007Co21 (also 2005Co25,2004Sz05): ^{208}Pb(^{40}Ca,^{42}Ca),E=225, 236, 250 MeV using similar experimental arrangement as in 2007Sz05. Deduced 0^+ excitation near 5.8 MeV.
All data listed here are from figure 8 in 2011Co14.

^{42}Ca Levels

E(level)	Jπ[†]	Comments
0	0^+	
1525	2^+	
1837	0^+	
2424	2^+	
2752	4^+	
3189	6^+	
3254	4^+	
3447	3^-	
3654	2^+	
3954	4^-	
4443	4^+	
4760	2^+	
5017	4^+	
5866	0^+	This state also excited in ^{208}Pb(^{40}Ca,^{42}Ca) reaction (2007Co21).

[†] From Adopted Levels.

γ(^{42}Ca)

Eγ[†]	Iγ[‡]	Ei(level)	J_i^π	E_f	J_f^π	Eγ[†]	Iγ[‡]	Ei(level)	J_i^π	E_f	J_f^π
313	24	1837	0^+	1525	2^+	1691	14	4443	4^+	2752	4^+
437	30	3189	6^+	2752	4^+	1729	38	3254	4^+	1525	2^+
502	38	3254	4^+	2752	4^+	1763	20	5017	4^+	3254	4^+
507	40	3954	4^-	3447	3^-	1922	27	3447	3^-	1525	2^+
899	74	2424	2^+	1525	2^+	2129	14	3654	2^+	1525	2^+
1023	25	3447	3^-	2424	2^+	2424	29	2424	2^+	0	0^+
1227	189	2752	4^+	1525	2^+	3235	10	4760	2^+	1525	2^+
1525	620	1525	2^+	0	0^+	4340	2	5866	0^+	1525	2^+

[†] Level-energy differences.
[‡] Reported intensities are based on branching ratios in Adopted Gammas.

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Level Scheme

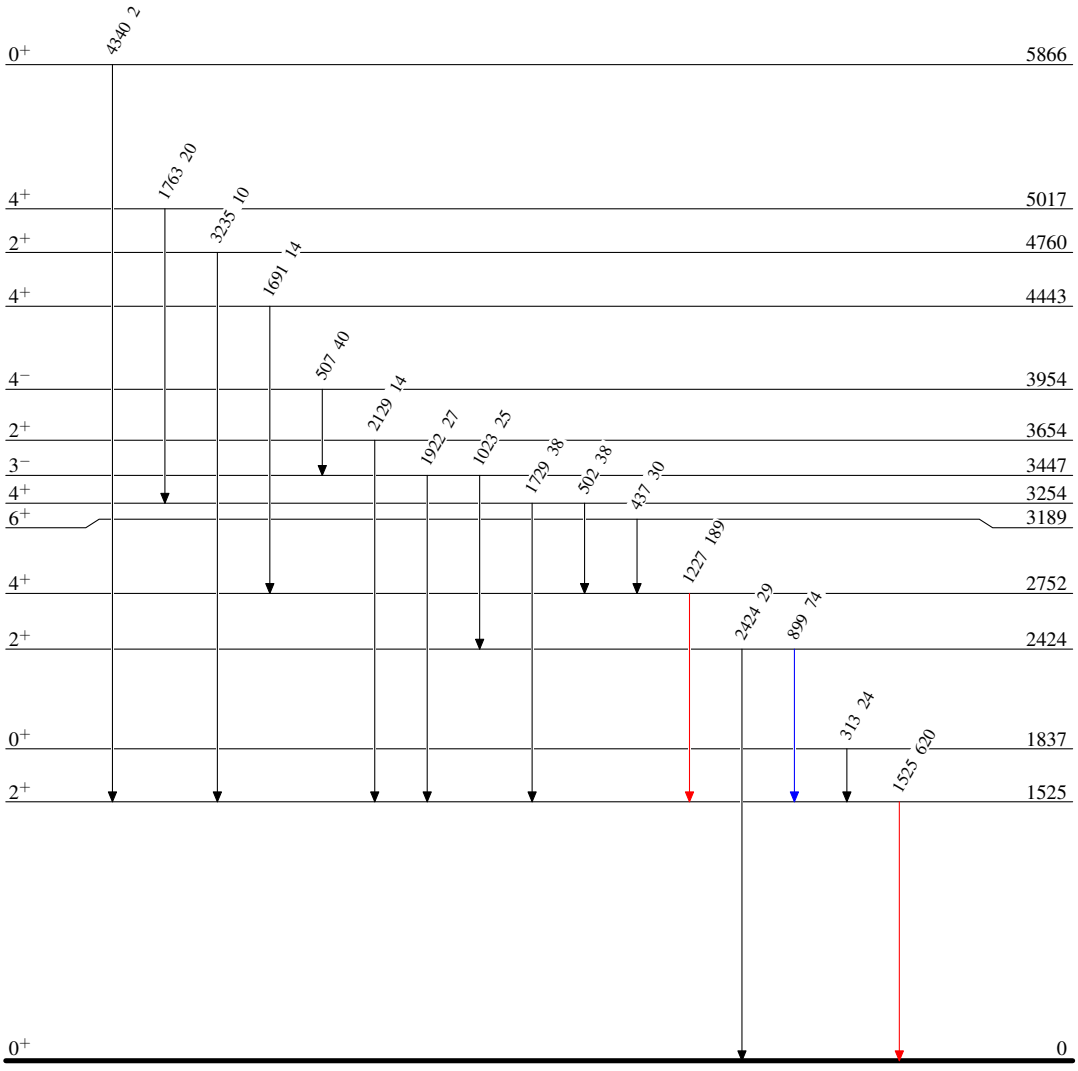
Intensities: Relative I_γ

Legend

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

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

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



$^{42}_{20}Ca_{22}$