^{9}Be(^{63}Mn,^{62}Crγ) 2015Br10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Huang Xiaolong, and Wang Xianghan	NDS 204,1 (2025)	30-Jun-2023

2015Br10: 140 MeV/nucleon ^{82}Se primary beam was produced from the Coupled Cyclotron Facility at NSCL incident on ^{9}Be targets. Fragments were separated and selected by the A1900 separator and impinged on a ^{9}Be plunger target. Projectile-like recoils were identified by the S800 spectrograph and a detector system consisting of a 16-fold ionization chamber for energy-loss measurement and two scintillators for time-of-flight. The γ rays were detected using SeGA array of 15, 32-fold segmented HPGe detectors. Measured Eγ, Iγ, Doppler-shifted γ spectra. Deduced lifetimes using Recoil-Distance Doppler-Shift (RDDS) method with Monte Carlo simulations and decay-curve analysis. Deduced E2 strengths, intrinsic quadrupole moments, and deformation parameters. Comparisons with shell-model calculations.

Measurement of half-lives of low-lying yrast states in ^{62}Cr via one-proton knockout reaction, and data analyzed based on Monte-Carlo simulations as well as conventional decay-curve analysis, while adopting the values from the former procedure.

^{62}Cr Levels

Q_0=Intrinsic quadrupole moment.

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0	0$^+$		
445 *2*	2$^+$	87 ps *9*	T$_{1/2}$: other: 91 ps *4* from RDDS with decay-curve analysis. Q_0=1.36 *+8−6*, β_2=0.33 (2015Br10).
1173 *4*	4$^+$	4.7 ps *6*	T$_{1/2}$: other: 4.8 ps *5* from RDDS with decay-curve analysis. Q_0=1.44 *+9−8*, β_2=0.35 (2015Br10).

[†] From Eγ values.
[‡] As given by 2015Br10.
[#] From Recoil-Distance Doppler-Shift (RDDS) method, with analysis based on Monte Carlo simulations. Values from decay-curve analysis are given under comments, with probably statistical uncertainties only. The two sets are in very good agreement.

γ(^{62}Cr)

E$_\gamma$	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	Comments
445 *2*	100	445	2$^+$	0	0$^+$	[E2]	B(E2)↓=0.0371 *+43−35* (2015Br10)
728 *3*	65	1173	4$^+$	445	2$^+$	[E2]	B(E2)↓=0.0589 *+79−62* (2015Br10)

[†] Relative intensities extracted from the best fit to the measured γ-ray spectrum based on a Monte-Carlo simulation (2015Br10).

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Level Scheme

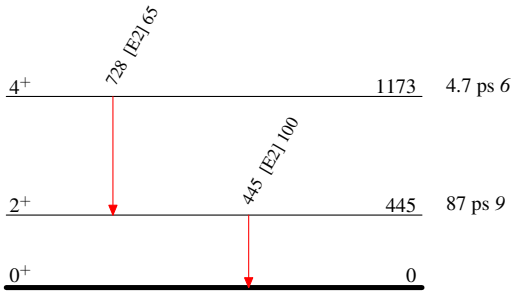
Intensities: Relative I_γ

Legend

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

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

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



$^{62}_{24}Cr_{38}$