

^{202}Fr α decay (0.372 s) [1992Hu04,2005Uu02,2014Ka23](#)

Type	Author	History	Citation	Literature Cutoff Date
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Parent: ^{202}Fr : $E=0$; $J^\pi=(3^+)$; $T_{1/2}=0.372$ s 12; $Q(\alpha)=7389$ 4; $\% \alpha$ decay ≈ 100.0

^{202}Fr - $T_{1/2}$: From [2014Ka23](#). Others: 0.30 s 5 ([2005Uu02](#)), 0.23 s +8-4 ([1996En01](#)), 0.34 s 4 ([1980Ew03](#)), 0.27 s +13-17 ([1998Es02](#)).

^{202}Fr - $\% \alpha$ decay: From ^{202}Fr Adopted Levels. 0.97 from systematics of ε decay ([1973Ta30](#)).

Decay of (3^+) ground state of ^{202}Fr .

[2014Ka23](#): ^{202}Fr produced in $^{149}\text{Sm}(^{56}\text{Fe}, p2n)$ at $E(^{56}\text{Fe})=244-275$ MeV beam from GSI accelerator facility. Target= 370 $\mu\text{g}/\text{cm}^2$ thick enriched to 96.9% in ^{149}Sm , and backed with 40 $\mu\text{g}/\text{cm}^2$ thick carbon backing and covered with a 10 $\mu\text{g}/\text{cm}^2$ layer of carbon. It was mounted on a rotating wheel. Evaporation residues were separated using SHIP facility at GSI, and implanted into the detection system consisting of 16-strip position sensitive Si detectors (PSSD), a pack of six Si strip detectors (BOX) at the back to detect escaping α particles, and three time-of-flight detectors in front of PSSDs. Measured position and time correlations between evaporation residues (Er) and α events, $E\alpha$, half-lives of ground states and isomers of ^{202}Fr and ^{198}At , Er- α - α correlations.

Comparison with previous experimental results.

(Er) $\alpha\alpha$ correlated events were assigned to $^{202}\text{Fr} \rightarrow ^{198}\text{At} \rightarrow ^{194}\text{Bi}$ decay chain ([2014Ka23](#)).

 ^{198}At Levels

E(level)	J^π	$T_{1/2}$	Comments
0	(3^+)	4.2 s 2	$\% \alpha=90$ 10 $T_{1/2}$: From Adopted Levels. $E\alpha=6747$ 5 from α decay of ^{198}At to ^{194}Bi (2014Ka23).

 α radiations

$E\alpha$	E(level)	$I\alpha^{\dagger\#}$	HF^{\ddagger}	Comments
7238 5	0	100	≈ 2	$E\alpha$: From 2014Ka23 . Others: 7241 keV 8 (2005Uu02), 7243 keV 6 (1996En01), 7237 keV 8 (1992Hu04), 7236 keV 7 (1998Es02). Reduced α width $\delta_\alpha^2=33$ keV 2 (2014Ka23), 40 keV 7 (2005Uu02).

† Per 100 α decays.

‡ $r_0=1.525$ 15.

$^{\#}$ For absolute intensity per 100 decays, multiply by ≈ 1.0 .