

$^{44}\text{Cl} \beta^-$  decay (0.56 s) 1999WiZX,2004Mr01,1995So03

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|-----------------|--|---------|----------------------|------------------------|
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Parent:  $^{44}\text{Cl}$ :  $E=0$ ;  $J^\pi=(2^-)$ ;  $T_{1/2}=0.56$  s 11;  $Q(\beta^-)=12.07 \times 10^3$  14;  $\% \beta^-$  decay=100.0

$^{44}\text{Cl}-Q(\beta^-)$ : From 2011AuZZ, 2003Au03 give 12440 110.

$^{44}\text{Cl}-\% \beta^-$  decay:  $\% \beta^-$  n<8.

2004Mr01:  $^{44}\text{Cl}$  produced by  $E=60$  MeV/nucleon  $^{48}\text{Ca}$  beam fragmented on a Be target and selected by the spectrometer LISE3 at GANIL. Isotopes implanted into a double-sided Si detector surrounded by two coaxial HPGe and one EXOGRAM four-fold clover detector; two plastic scintillators for detecting  $\beta$  radiation. Measured  $E_\gamma$ ,  $I_\gamma$ . Deduced levels, branchings.

1999WiZX:  $^{44}\text{Cl}$  produced by fragmentation of  $^{48}\text{Ca}$  beam at 70 MeV/nucleon with a Be target. Measured  $E_\gamma$ ,  $I_\gamma$ ,  $\gamma\gamma$  coin and  $\beta\gamma\gamma$  coin using Ge and Si detectors.

1995So03:  $^{44}\text{Cl}$  identified in  $^{64}\text{Ni}(^{48}\text{Ca},X)$   $E=60$  MeV/nucleon.

The  $^{44}\text{Cl}$  decay branch to  $^{43}\text{Ar}$  by  $\beta^-$  n is <8%.

The level scheme is from 1999WiZX.

 $^{44}\text{Ar}$  Levels

| E(level) <sup>†</sup> | $J^\pi$ <sup>‡</sup>    | Comments  |
|-----------------------|-------------------------|---|
| 0                     | $0^+$                   |   |
| 1157.98 11            | $2^+$                   |   |
| 2010.64 12            | $(2^+)$                 |   |
| 2746.2 3              | $(4^+)$                 | $J^\pi$ : $\gamma$ to $0^+$ makes $(4^+)$ less likely. It is possible that either the level populated here is different from the one populated in the in-beam $\gamma$ -ray studies or that the 2747 $\gamma$ should be placed elsewhere. |
| 2975.94 16            | $(0^+ \text{ to } 4^+)$ |   |
| 4807.1 4              | $(0^+ \text{ to } 4^+)$ |   |
| 5351.7 4              | $(0^+ \text{ to } 4^+)$ |   |

<sup>†</sup> From least-squares fit to  $E_\gamma$  data.

<sup>‡</sup> From Adopted Levels.

 $\gamma(^{44}\text{Ar})$ 

| $E_\gamma$ <sup>†</sup> | $I_\gamma$ <sup>†</sup> | $E_i(\text{level})$ | $J_i^\pi$               | $E_f$   | $J_f^\pi$               |
|-------------------------|-------------------------|---------------------|-------------------------|---------|-------------------------|
| 852.77 10               | 60.8 13                 | 2010.64             | $(2^+)$                 | 1157.98 | $2^+$                   |
| 965.32 12               | 8.3 6                   | 2975.94             | $(0^+ \text{ to } 4^+)$ | 2010.64 | $(2^+)$                 |
| 1158.11 12              | 100 4                   | 1157.98             | $2^+$                   | 0       | $0^+$                   |
| 1588.1 3                | 3.6 3                   | 2746.2              | $(4^+)$                 | 1157.98 | $2^+$                   |
| 1817.7 3                | 3.9 4                   | 2975.94             | $(0^+ \text{ to } 4^+)$ | 1157.98 | $2^+$                   |
| 2010.18 18              | 41.8 13                 | 2010.64             | $(2^+)$                 | 0       | $0^+$                   |
| 2375.6 3                | 8.1 5                   | 5351.7              | $(0^+ \text{ to } 4^+)$ | 2975.94 | $(0^+ \text{ to } 4^+)$ |
| 2747.0 8                | 1.7 3                   | 2746.2              | $(4^+)$                 | 0       | $0^+$                   |
| 2796.0 4                | 49.0 20                 | 4807.1              | $(0^+ \text{ to } 4^+)$ | 2010.64 | $(2^+)$                 |
| 3338.4 15               | 3.3 6                   | 5351.7              | $(0^+ \text{ to } 4^+)$ | 2010.64 | $(2^+)$                 |
| 3649.8 <sup>‡</sup>     |                         | 4807.1              | $(0^+ \text{ to } 4^+)$ | 1157.98 | $2^+$                   |
| 4195.0 <sup>‡</sup>     |                         | 5351.7              | $(0^+ \text{ to } 4^+)$ | 1157.98 | $2^+$                   |
| 4808.0 <sup>‡</sup>     |                         | 4807.1              | $(0^+ \text{ to } 4^+)$ | 0       | $0^+$                   |

<sup>†</sup> From 1999WiZX. The intensities are not corrected for summing effects, unless otherwise noted.

<sup>‡</sup> From 2004Mr01.

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## Decay Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

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

