## Adopted Levels, Gammas

History

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

Q($\beta^-$)=7.28×10$^3$ *14*; S(n)=6700 *5*; S(p)=19950 *80*; Q($\alpha$)=−15890 *70* 2012Wa38
S(2n)=10943 *5*, S(2p)=37650 *230*, Q($\beta^-$n)=1600 *70* (2012Wa38).
$^{42}$S identified and produced by 1975WiZG using $^{48}$Ca($\alpha$,$^{10}$C) at E=110 MeV.
Mass measurements: mass excess=−17637.9 *27* (2009Ri12), −17700 *130* (2000Sa21) (weighted average of −18060 *330* (2000Sa21) and −17640 *140* from another study quoted by 2000Sa21), 1991Zh24.
$^{42}$S produced by fragmentation of $^{48}$Ca beam (2009Ri12,2002Az02,1998WiZX, 1998WiZV); $^{64}$Ni($^{48}$Ca,X) E=60 MeV/nucleon (1995So03); Th(p,X) E=800 MeV (1991Zh24); $^{238}$U($^{40}$Ar,X) E=263 MeV (1979Au03); $^{9}$Be($^{48}$Ca,X) E=212 MeV (1979We10).
Cross-section measurements: 2006Kh08, 2006Ro34.
Additional information 1.

### $^{42}$S Levels

Cross Reference (XREF) Flags

- A $^{42}$P $\beta^-$ decay (48.5 ms)
- B $^{43}$P $\beta^-$n decay (36.5 ms)
- C $^{9}$Be($^{48}$Ca,X$\gamma$)
- D Coulomb excitation

| E(level)[†] | J$^\pi$ | T$_{1/2}$ | XREF | Comments |
|---|---|---|---|---|
| 0 | 0$^+$ | 1.016 s *15* | CD | %$\beta^-$=100; %$\beta^-$n<4 (1995So03)<br>%$\beta^-$n: <4 (1995So03), but none observed by 1998WiZX.<br>Theoretical T$_{1/2}$=2.5 s, %$\beta^-$n=1.5 (2003Mo09).<br>Theoretical T$_{1/2}$=1.26 s, %$\beta^-$n=7.2 (2016Ma12).<br>T$_{1/2}$: weighted average of 1.013 s *15* from 1998WiZX and 1.03 s *3* from 2006Wi10. Other: 0.56 s *6* (1995So03).<br>Mean radius r$_0^2$=1.251 fm$^2$ *25* (2006Kh08). |
| 903 *5* | 2$^+$ | 11.9 ps *20* | CD | B(E2)↑=0.0397 *63* (1996Sc31)<br>J$^\pi$: Coulomb excited from 0$^+$.<br>T$_{1/2}$: from B(E2) (1996Sc31). |
| 2725 *10* | (4$^+$)[‡] | | C | |
| 2779 *11* | (2$^+$)[‡] | | C | |
| 4245 *13* | | | C | |

[†] From E$\gamma$ data.
[‡] ΔJ=2 quadrupole or ΔJ=0, dipole from $\gamma(\theta)$ for 1821+1875 summed peak, and systematic of neighboring nuclides.

### $\gamma$($^{42}$S)

| E$_i$(level) | J$_i^\pi$ | E$_\gamma$ | I$_\gamma$ | E$_f$ | J$_f^\pi$ | Mult. | Comments |
|---|---|---|---|---|---|---|---|
| 903 | 2$^+$ | 903 *5* | 100 | 0 | 0$^+$ | E2 | B(E2)(W.u.)=9.1 *16*<br>E$_\gamma$: weighted average of 890 *15* (Coul. ex.) and 904 *5* ($^{48}$Ca,X$\gamma$). |
| 2725 | (4$^+$) | 1821 *8* | 100 | 903 | 2$^+$ | | |
| 2779 | (2$^+$) | 1875 *9* | 100 | 903 | 2$^+$ | | |
| 4245 | | 1466 *8* | 100 | 2779 | (2$^+$) | | |

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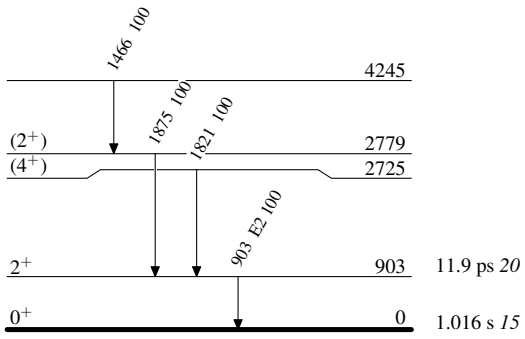
### Level Scheme

Intensities: Relative photon branching from each level




$^{42}_{16}S_{26}$