

⁹⁰Zr(e,e') [1975Si21](#), [1980Me13](#), [1984He02](#)

| Type | Author | History | Citation | Literature Cutoff Date |
|-----------------|-----------------------------|------------------|----------|------------------------|
| Full Evaluation | S. K. Basu, E. A. McCutchan | NDS 165,1 (2020) | | 1-Mar-2020 |

1975Si21: E=53.75-112.2 MeV. Measured $\sigma(E,\theta)$, momentum transfer=0.29-1.07 fm⁻¹, FWHM≈0.15%, enriched target. DWBA analysis.

1980Me13: E=24-66 MeV. Measured $\sigma(E,\theta)$, momentum transfer=0.20-0.62 fm⁻¹, FWHM≈30 keV, enriched target. DWBA analysis.

1984He02: E=70-368 MeV. Measured $\sigma(E,\theta)$, momentum transfer=0.4-3.1 fm⁻¹, FWHM<40 keV, enriched target. DWBA analysis.

Others: [1983Sc01](#), [1982Sc08](#), [1982Fa11](#), [1974Si01](#), [1973Ph02](#), [1991Ta23](#), [1970Be07](#).

The radius of the g(9/2) proton orbit was determined from the density of the 3589, 8⁺ level as R=5.04 fm 5 ([1984He02](#)).

Configuration assignments are from [1984He02](#).

For summed M1 and M2 strength in the region 8-10 MeV, see [1980Me13](#).

For deformation parameters, see [1975Si21](#).

⁹⁰Zr Levels

| E(level) [†] | J [#] | Comments |
|-----------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | | |
| 2180 13 | 2 ⁺ | B(E2)↑=0.0653 21 (1984He02); Configuration=(π 1g _{9/2}) ⁺² B(E2)↑: Other: 0.067 6 (1975Si21). |
| 2310 11 | 5 ⁻ | |
| 2738 15 | 3 ⁻ | B(E3)↑=0.087 10 (1975Si21) |
| 3060 15 | 4 ⁺ | Configuration=(π 1g _{9/2}) ⁺² B(E4)↑: Other: 0.0030 9 (1975Si21). |
| 3290 25 | 2 ⁺ | B(E2)↑=0.0078 8 (1984He02); Configuration=(π 1g _{9/2} 0 ⁺)(CORE 2 ⁺) |
| 3456 [‡] | 6 ⁺ | Configuration=(π 1g _{9/2}) ⁺² |
| 3589 [‡] | 8 ⁺ | Configuration=(π 1g _{9/2}) ⁺² |
| 3835 14 | 2 ⁺ | B(E2)↑=0.0224 13 (1984He02); Configuration=(π 1g _{9/2} 2 ⁺⁾ (CORE 2 ⁺) |
| 3955 23 | 5 ⁻ | |
| 4067 22 | (4 ⁺) | Configuration=(π 1g _{9/2} 2 ⁺⁾ (CORE 2 ⁺) |
| 4223 [‡] 2 | (2 ⁺) | |
| 4228 [‡] 2 | (4 ⁻) | |
| 4231 [‡] 2 | (6 ⁻) | |
| 4334 [‡] 2 | 4 ⁺ | Configuration=((ν 2d _{5/2})(ν 1g _{9/2}) ⁻¹) |
| 4460 [‡] | (5 ⁺) | Configuration=((ν d _{5/2})(ν 1g _{9/2}) ⁻¹) |
| 4471 12 | 4 ⁺ | |
| 4542 [‡] | 6 ⁻ | Configuration=((π 1g _{9/2})(π 2p _{3/2}) ⁻¹) |
| 4548 [‡] 4 | 6 ⁺ | Configuration=((ν 2d _{5/2})(ν 1g _{9/2}) ⁻¹) |
| 4690 [‡] | 2 ⁺ | Configuration=(π 1g _{9/2} 0 ⁺)(CORE 2 ⁺) |
| 5061 [‡] | 7 ⁺ | Configuration=((ν 2d _{5/2})(ν 1g _{9/2}) ⁻¹) |
| 5070 [‡] | (2 ⁺) | Configuration=(π 1g _{9/2} 0 ⁺)(CORE 2 ⁺) |
| 5620 20 | 3 ⁻ | B(E3)↑=0.0068 10 (1975Si21) |
| 5770 32 | 3 ⁻ | B(E3)↑=0.00145 22 (1975Si21) |
| 7774 10 | (1 ^{+,2⁻)} | |
| 7806 10 | (2 ⁻) | |
| 7868 10 | (1 ^{+,2⁻)} | |
| 7907 10 | | |
| 7996 10 | (3 ⁻) | |
| 8032 10 | 2 ⁻ | |
| 8113 10 | 1 ⁻ ,(2 ⁻) | |
| 8142 10 | 1 ^{+,} (2 ⁻) | |
| 8233 10 | 1 ⁺ | |

Continued on next page (footnotes at end of table)

$^{90}\text{Zr}(\text{e},\text{e}')$ 1975Si21,1980Me13,1984He02 (continued)

^{90}Zr Levels (continued)

| E(level) [†] | J ^{π#} | E(level) [†] | J ^{π#} | E(level) [†] | J ^{π#} | E(level) [†] | J ^{π#} |
|-----------------------|--------------------------------|-----------------------|-------------------|-----------------------|--------------------------------|-----------------------|--------------------------------|
| 8291 10 | 2 ⁻ | 8627 10 | 2 ⁻ | 9000 10 | 1 ⁺ | 9371 10 | 1 ⁺ |
| 8316 10 | (2 ⁻) | 8701 10 | (2 ⁻) | 9061 10 | 2 ⁻ | 9439 10 | 1 ^{+,(2⁻)} |
| 8366 10 | (1 ⁺) | 8809 10 | (2 ⁻) | 9101 10 | 2 ⁻ | 9489 10 | 2 ⁻ |
| 8400 10 | (2 ⁻) | 8853 10 | 2 ⁻ | 9127 10 | 2 ⁻ | 9520 10 | (1 ^{+,2⁻)} |
| 8442 10 | 2 ⁻ | 8882 10 | 2 ⁻ | 9150 10 | 1 ^{-,(2⁻)} | 9541 10 | 2 ⁻ |
| 8494 10 | 1 ^{-,(2⁻)} | 8911 10 | 2 ⁻ | 9265 10 | 2 ⁻ | 9601 10 | (1 ^{-,2⁻)} |
| 8542 10 | 2 ⁻ | 8934 10 | 2 ⁻ | 9294 10 | 2 ⁻ | 9694 10 | 2 ⁻ |
| 8602 10 | (1 ⁺) | 8971 10 | 2 ⁻ | 9327 10 | 2 ⁻ | 9863 10 | (1 ^{-,2⁻)} |

[†] Data are from 1975Si21 for levels up to 6 MeV and from 1980Me13 for levels above 6 MeV, except where noted. ΔE as stated by 1980Me13, is 3-10 keV for levels above 6 MeV.

[‡] From 1984He02.

[#] As given by the authors, derived from a combination of literature and DWBA analysis by 1975Si21,1984He02, and from DWBA analysis by 1980Me13.