## Coulomb excitation    2009Va01,2007Va20

### History

| Type | Author | Citation | Literature Cutoff Date |
|------|--------|----------|------------------------|
| Full Evaluation | Ameenah R. Farhan, Balraj Singh | NDS 110, 1917 (2009) | 30-Jun-2009 |

2009Va01:E=2.87 MeV/nucleon $^{78}$Zn beam produced at Radioactive Ion Beam facility REX-ISOLDE (CERN). Target=$^{108}$Pd. The Zn beams were produced using protons at E=1.4 GeV impinging $UC_x$ target. The Mass- separated Zn beam was accumulated and bunched in a Penning Trap. Measured E$\gamma$ using MINIBALL array of 24 HPGe detectors. Charged particles were measured with a double-sided silicon strip detector. Comparisons with collective model predictions and large-scale shell- model calculations. Experimental results analyzed using GOSIA2 code.

2007Va20 (also 2005Va19): Beam=Mass separated $^{78}$Zn at 2.87 MeV/nucleon produced by $UC_x$(p,X) at 1 GeV proton energy; REX-ISOLDE facility at CERN. Target=$^{108}$Pd. Measured $\gamma$ rays using MINIBALL Ge detector array of eight clusters, each having three six-fold segmented HPGe crystals. This work is by the same group as 2009Va01.

Additional information 1.

2005Va19 quoted unpublished Coulomb excitation work of P. Mayet et al (reference 29 in 2005Va19) which also established 730 level As the first excited (2$^+$) state.

### $^{78}$Zn Levels

| E(level) | J$^{\pi\dagger}$ | T$_{1/2}$ | Comments |
|----------|------------------|-----------|----------|
| 0 | 0$^+$ | | |
| 730 | 2$^+$ | 18 ps *4* | B(E2)↑=0.077 *19* (2007Va20,2009Va01) |
| | | | T$_{1/2}$: deduced from BE2(↑) (2009Va01). |
| 1621? | (4$^+$) | | E(level): from 2009Va01. |

$^\dagger$ From 'Adopted Levels'.

### $\gamma$($^{78}$Zn)

| E$_\gamma$$^\dagger$ | E$_i$(level) | J$_i^\pi$ | E$_f$ | J$_f^\pi$ | Comments |
|----------------------|--------------|-----------|-------|-----------|----------|
| 730 | 730 | 2$^+$ | 0 | 0$^+$ | B(E2)(↓)=0.0154 *38* (2009Va01). This value is about the same as corresponding B(E2)(↑) listed in 2007Va20. |
| 891$^\ddagger$ | 1621? | (4$^+$) | 730 | 2$^+$ | |

$^\dagger$ From 2009Va01.
$^\ddagger$ Placement of transition in the level scheme is uncertain.

**Coulomb excitation      2009Va01,2007Va20**                    Legend

<u>Level Scheme</u>

- - - - - - ▶  γ Decay (Uncertain)

(4$^+$) - - - - - - - - - - - - - - - - - - - - - 1621

2$^+$ _____ 730      18 ps *4*

0$^+$ _____ 0

$^{78}_{30}$Zn$_{48}$