## Coulomb excitation 2011Ra42

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | G. Gürdal, E. A. Mccutchan | NDS 136, 1 (2016) | 1-Jul-2016 |

2011Ra42: $^{120}$Sn($^{70}$Cu,$^{70}$Cu′) and $^{120}$Sn($^{70m}$Cu,$^{70m}$Cu′) with E($^{70}$Cu)=2.83MeV / nucleon and E($^{70m}$Cu)=2.85 MeV / nucleon. The $^{70}$Cu beams were produced through proton induced fission of a $UC_x$ target with E(p)=1.4 GeV, followed by mass separation and isomeric purification through resonant laser ionization using RILIS laser-ion source. The Cu activities were then post-accelerated by REX at ISOLDE. Measured E$\gamma$, I$\gamma$, particle-$\gamma$ coincidences using the MINIBALL HPGe array and an annular Compact Disk shaped double sided silicon strip detector; deduced transition strengths by comparison of observed excitation cross section to predictions of CLX code based on Winther-De Boer theory. Earlier results on the Coulomb excitation of the $^{70}$Cu ground state are given in 2007St03 and preliminary results in 2006Ge18.

The beams studied in 2011Ra42 were a mixture of the ground state and two isomeric levels in $^{70}$Cu. For the beam the authors refer to as the ground state ($J^\pi=6^-$) experiment, the composition was 85% *5* $^{70}$Cu ground state, 7% *2* the $J^\pi=3$-, 33-s isomer, and 7% *3* the $J^\pi=1^+$, 6.6-s isomer. For the beam the authors refer to as the $J^\pi=3^-$ experiment, the composition was 74% *7* $^{70}$Cu ground state, 25% *3* the $J^\pi=3$-, 33-s isomer, and <1% the $J^\pi=1^+$, 6.6-s isomer.

### $^{70}$Cu Levels

| E(level)† | J$^\pi$† | T$_{1/2}$† | Comments |
|---|---|---|---|
| 0‡ | $6^-$ | 44.5 s *2* | |
| 101.1‡ | $3^-$ | 33 s *2* | |
| 228.5‡ | $4^-$ | | B(E2) ($6^-$ to $4^-$)=0.0069 *9* (2011Ra42).<br>B(E2) ($3^-$ to $4^-$)=0.0073 *10* (2011Ra42). |
| 242.2 | $1^+$ | 6.6 s *2* | |
| 511‡ | $5^-$ | | B(E2) ($6^-$ to $5^-$)≤ 0.0011 *2* (2011Ra42).<br>B(E2) ($3^-$ to $5^-$)=0.0136 *15* (2011Ra42). |

† From the Adopted Levels.
‡ Multiplet of states from the $\pi 2p_{3/2}\nu 1g_{9/2}$ configuration.

### $\gamma$($^{70}$Cu)

| E$_\gamma$ | E$_i$(level) | J$_i^\pi$ | E$_f$ | J$_f^\pi$ | Comments |
|---|---|---|---|---|---|
| 127 | 228.5 | $4^-$ | 101.1 | $3^-$ | E$_\gamma$: observed in both the $J^\pi=3^-$ beam and the $J^\pi=6^-$ beam. |
| 511 *3* | 511 | $5^-$ | 0 | $6^-$ | E$_\gamma$: observed in the $J^\pi=3^-$ beam, but not in the $J^\pi=6^-$ beam. |

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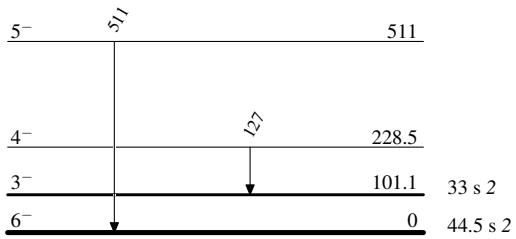
Level Scheme




$^{70}_{29}Cu_{41}$