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Spin determination and nuclear moment measurements of 71Cu and 72Cu

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As part of the IS439 experiment the COLLAPS collaboration has recently measured the hyperfine structure of 71,72Cu. From this work we are able to unambiguously assign the spin of 72Cu and extract the magnetic and quadrupole moments for both isotopes. This work is part of the ongoing investigation of the evolution of nuclear structure with neutron excess in the copper isotope chain. A central motivation of the original proposal was to measure the spin/parity of 72Cu, and thus resolve the inconsistency between recent results from in-source spectroscopy and beta-decay studies [1,2]. This experiment uses high-resolution laser spectroscopy, which can unambiguously measure the nuclear spin and provide model-independent measurements of the nuclear moments. The interpretation of these recent measurements in conjunction with the hyperfine structure measurements from 2006 will be presented and discussed.

[1] J.-C. Thomas et al., Phys. Rev. C 74, 054309 (2006).
[2] U. Koster, Private Communication, 2005.

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