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Mass of the lowest $T = 2$ level in ^{32}Cl C. WREDE, U. Washington, C.M. DEIBEL, Joint Inst. Nuclear Astrophysics and Argonne National Lab., J.A. CLARK, Argonne National Lab., S. CALDWELL, U. Chicago and Argonne National Lab., A. CHAUDHURI, J. FALLIS, U. Manitoba and Argonne National Lab., A. GARCIA, U. Washington, S. GULICK, McGill U., D. LASCAR, Northwestern U. and Argonne National Lab., G. LI, McGill U. and Argonne National Lab., G. SAVARD, Argonne National Lab. and U. Chicago, K.S. SHARMA, U. Manitoba, M. STERNBERG, U. Chicago and Argonne National Lab., T. SUN, Argonne National Lab., J. VAN SCHELT, U. Chicago and Argonne National Lab. — The mass of ^{31}S has been measured to better than 0.5 keV/ c^2 using the Canadian Penning Trap mass spectrometer at Argonne National Laboratory's ATLAS facility. The result changes the mass of the lowest $T = 2$ level in ^{32}Cl substantially and improves its precision by roughly a factor of three. The new Q_{EC} value for the superallowed β decay of ^{32}Ar to this level affects constraints on scalar currents via the $\beta - \nu$ correlation and the isospin-symmetry-breaking correction (δ_C) to the ft value for this decay. The quadratic isobaric multiplet mass equation (IMME) is found to fail for the lowest $T = 2$, $A = 32$ isobaric quintet with higher confidence than for any other isobaric multiplet; the cubic fit is excellent.

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