JOURNAL OF THE PHYSICAL SOCIETY OF JAPAN VOL. 34, SUPPLEMENT, 1973
PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON NUCLEAR MOMENTS AND NUCLEAR STRUCTURE, 1972

III–11 The Magnetic Moment of the 1.8 μs State in ^{122}Sb

P. HEUBES, H. INGWERSEN, H. G. JOHANN, W. KLINGER
W. LAMPERT, W. LOEFFLER, G. SCHATZ and W. WITTHUHN

Physikalisches Institut der Universität Erlangen-Nürnberg Erlangen, Germany

The magnetic moment of the first excited state in ^{122}Sb ($J^{\pi} = 3^+$, $T_{1/2} = 1.8$ μs) was measured by the stroboscopic method (SOPAD).[1] Antimony nuclei in this isomeric state were produced and simultaneously aligned via the reaction ^{122}Sn(p, n) ^{122}Sb. The target, 92, 25% enriched ^{122}Sn, was maintained in a molten state during the experiment in order to reduce relaxation processes. The proton beam of 11 MeV was chopped into pulses of 5 ns duration with a repetition time of 200 ns. The stroboscopic resonance occured at an applied magnetic field of 3320 Oe, corresponding to an uncorrected g-factor $g = +0.988 \pm 0.004$ (see Fig. 1). The sign of the g-factor was derived from a SOPAD dispersion curve.

A comparison of the experimental g-factor with shell-model calculations, including configuration mixing, gives the best agreement when the configuration $[\pi(1g_{7/2})\ \nu(3s_{1/2})]_{3^+}$ is assumed.

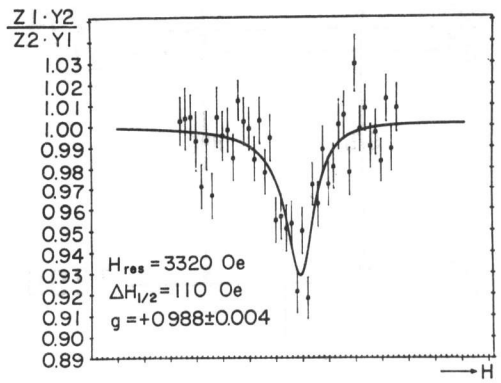

Fig. 1. Stroboscopic resonance

References

1) J. Christiansen, H.-E. Mahnke, E. Recknagel, D. Riegel, G. Weyer and W. Witthuhn: Phys. Rev. Letters **21** (1968) 554; J. Christiansen, H.-E. Mahnke, E. Recknagel, D. Riegel, G. Schatz, G. Weyer and W. Witthuhn: Phys. Rev. **C1** (1970) 613.

2) H. Noya, A. Arima and H. Horie: Progr. theor. Phys. Suppl. **8** (1958) 33.

Configuration	g_{exp}	g_{sp}[a]	g_{NAH}[b]	g_{emp}[c]	exp. g-factor of neighbouring nuclei
$\pi(1g_{7/2})^1$	+0.988	+1.031	+1.004	+0.992	$g_{\pi} = +0.718(^{121}\text{Sb})$
$\nu(3s_{1/2})^1$					$g_{\nu} = -1.472(^{123}\text{Te})$

a) single-particle value
b) g-factor calculated with configuration mixing according to Noya *et al.*[2]
c) empirical g-factor obtained by using the experimental g-factors of neighbouring nuclei (last column)