noted that saturation of the electronic resonance is not necessarily required.

It should be possible to apply this effect toward obtaining polarized samples for the study of nuclear level decay schemes. Another consequence is that it is possible to measure nuclear relaxation times in systems where the nuclear resonance cannot be observed because of the strong and fluctuating local magnetic field at the nucleus due to the electrons.

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Nuclear Electric Quadrupole Moment of Na^{23}

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It has recently been reported by Sagalyn[1] that the nuclear electric quadrupole moment of Na^{23} is $+0.1\times10^{-24}$ cm². On Mayer's single-particle level scheme, there are three possible configurations for the ground state of Na^{23}. They are $[(d_{5/2})^3]_{3/2}$, $[(d_{5/2})^2s_{1/2}]_{3/2}$, $[(d_{3/2})^3]_{3/2}$. The actual level order here, as given by Mayer,[2] is $d_{5/2}$, $s_{1/2}$, $d_{3/2}$. The last assignment, though giving a positive Q, is extremely improbable, because of the large departure of the observed magnetic moment from the Schmidt limit. Mayer herself preferred the first assignment, especially because a calculation of μ with jj coupling gives for this configuration a value of 2.87 nm, in fairly good agreement with the experimental value of 2.22 nm. However, as has been shown by Sagalyn,[1] the quadrupole moment in this configuration with jj coupling comes out to be zero. Hence the $(d_{5/2})^3$ configuration also cannot be accepted. We are thus left with the second alternative. Calculations for both magnetic and quadrupole moments have been carried out for this configuration with jj coupling. The wave functions for the $(d_{5/2})^2$ configuration are calculated by the method of Gray and Wills[3] and the total wave function for $(d_{5/2})^2s_{1/2}$ is then antisymmetrized by the method given in Condon and Shortley.[4] The $(d_{5/2})^2$ state is coupled with the $s_{1/2}$ state to give the observed spin of 3/2. The result gives

$$\mu=1.78 \text{ nm},$$

$$Q=+(8/35)\langle r^2\rangle_{Av}=+0.041\times10^{-24} \text{ cm}^2,$$

where $\langle r^2\rangle_{Av}$ is calculated from the formula $r=1.5A^{\frac{1}{3}}\times10^{-13}$ cm. Thus the observed magnetic dipole and electric quadrupole moments of Na^{23} are found to support the assignment $[(d_{5/2})^2s_{1/2}]_{3/2}$ for its ground state.

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K Mesons and a Charged Hyperon Produced by 3-Bev Protons in Emulsions*

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A GROUP of glass backed plates and pellicles were exposed inside the Cosmotron to 3-Bev protons. The proton flux was greatly reduced from the normal operating intensity, and the plates were exposed to about 5 pulses from the Cosmotron. The proton track density in the plates is about 5×10^5 tracks/cm².

The emulsions were area scanned with an over-all magnification of about 100×, looking for slow heavy mesons, hyperons, and bound Λ^0 particles. In this note we describe three events which are interpreted as two K mesons and a hyperon. These three events were found in 4.5 cc of emulsion. A detailed description of bound Λ^0 particles will be given elsewhere.

The essential characteristics of the three events are given in Table I.

A photograph of the production and decay of particle K_1 is shown in Fig. 1. The track of the K meson is 7000 microns long and stops in the same plate, giving rise to a secondary track which is nearly in the plane of the emulsion and is 24 000 microns long in the same plate. The ionization along the secondary track was measured by blob counting and was compared with 3-Bev proton tracks at the same depth in the emulsion. The ionization of the secondary particle was found to be 1.08±0.06 times that of the 3-Bev protons. The scattering parameter, $p\beta$, of the secondary particle was found to be 180±13 Mev/c by using cells of 200 microns. The kinetic energy of the secondary particle is 121±9 Mev, 109±8 Mev, or 180±13 Mev if we assume it to be a μ meson, a π meson, or an electron respectively. The expected relative ionization,[1] compared with 3-Bev protons, is 1.1±0.02 for a μ meson and 1.2±0.02 for a π meson. The measured ionization and multiple scattering strongly indicate that the secondary particle is a μ meson or an electron. If the secondary particle is assumed to be a π meson, the expected ionization differs from the measured value by about two standard deviations. The mass of the K_1 particle was found to be $850\pm150m_e$ by using the constant sagitta method.[2,3] The event is consistent with the decay of a meson of