

## OBSERVATION OF ATOMIC MUONIUM IN CRYSTALLINE QUARTZ

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The asymmetry coefficient ( $c'$ ) in the angular distribution of the positrons from the decay of mesons stopped in crystalline quartz at room temperature was measured in the meson beam of the JINR synchrocyclotron with the aid of apparatus used to observe  $\mu^+$ -meson spin precession in a magnetic field. The target was a set of plates of acoustical crystalline quartz, of 100 x 100 mm area and 8.28 g/cm<sup>2</sup> thickness.

Four cycles of the sinusoidal precession curve, with a frequency corresponding to the magnetic moment and spin of the  $\mu^+$  meson, were traced at a magnetic field intensity  $50.0 \pm 0.3$  Oe for  $\sim 6$   $\mu$ sec after the stopping of the  $\mu^+$  meson in the target. The asymmetry coefficient corrected for the energy spectrum of the emitted positrons, for the counter geometry, and for the beam polarization was equal to  $c' = 0.065 \pm 0.006$  (the total number of  $\mu^+$  mesons stopped in the target was  $4 \times 10^6$ , and the product of the solid angle by the counter efficiency was  $\sim 1/30$ ).

At a magnetic field intensity 2.70 and 1.35 Oe (observation for  $\sim 1.5$   $\mu$ sec, number of stoppings in the target  $1 \times 10^7$ ), the obtained precession corresponded to the frequency of revolution of atomic muonium with exponentially damped amplitude and with relaxation time 0.3 - 0.4  $\mu$ sec. The experimental asymmetry coefficient, extrapolated to zero time, was  $c'_0 = 0.09 - 0.13$  without correction for the beam polarization.

A more detailed investigation of the precession of atomic muonium was hindered by the presence of intensity modulation, connected with the fine structure of the accelerator pulse. Work on the investigation of the phenomenon is being continued.

THE DECAYS  $V \rightarrow \gamma + l^+ + l^-$  AND C-NONINVARIANCE OF ELECTROMAGNETIC INTERACTION

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In connection with the possible existence of charge-invariant electromagnetic interaction [1], several authors investigated meson decays <sup>2)</sup>, the experimental observation and study of which could provide a check on the correctness of this hypothesis. In particular, theo-