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A STUDY OF THE DECAYS OF 194,195,196Pb

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Decay properties of 1^{94} , 1^{95} , 1^{96} Pb have been studied using singles and coincident γ -ray spectroscopy. Sources were produced by the 95 MeV 1^{97} Au(⁶Li,xn) reactions. No direct evidence for the decay of a low-spin isomer of 1^{95} Pb was observed. Several new levels were observed in 1^{95} , 1^{96} Tl, and are interpreted in terms of a rotational model. The low-lying states of the odd Tl nuclei are especially interesting in view of their proposed¹,² oblate deformation. States of fairly high spin in these nuclei can be studied by observing the γ -rays following the β /EC decay of the isomeric 13/2⁺ levels³ of the odd Pb nuclei.

The decay of the $13/2^+$ isomer in 195 Pb has been investigated by several groups.¹,²,⁴,⁵ High-spin states of 195 Tl have also been studied using in-beam γ -ray spectroscopy.¹,² These studies are summarized in a recent compilation,⁶,⁷ which includes a preliminary report of the decay of 195 Bpb. Levels in 194 ,¹⁹⁶Tl populated by 194 ,¹⁹⁶Pb decay have been known for some time.

The present study is an extension of our previous

work⁸ on ¹⁹⁷Pb decay, with one of the major goals being the clarification of the relative importance of the ¹⁹⁵mpb \rightarrow ¹⁹⁵gpb decay branch. The results of the present experiment are shown in Figs. 1 and 2. Fig. 1 shows the decay of 15 min ¹⁹⁵mpb (13/2⁺) where the most interesting features of the decay are the population of the 9/2⁻[505]_p band, the three

quasiparticle bands and the 13/2⁺[606]_p band. In Fig. 2 the state at 755 keV in the decay of ¹⁹⁶Pb was established and the low-lying structure identified and characterized in terms of the Nilsson configurations. No new transitions were observed in the decay of ¹⁹⁴Pb; however, a more precise half-life measurement was performed.

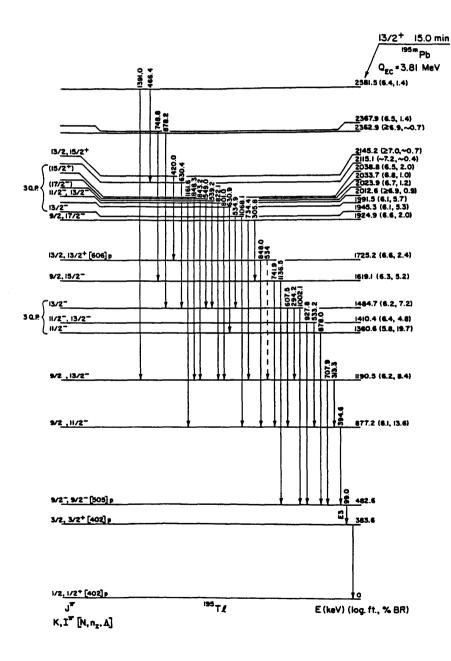
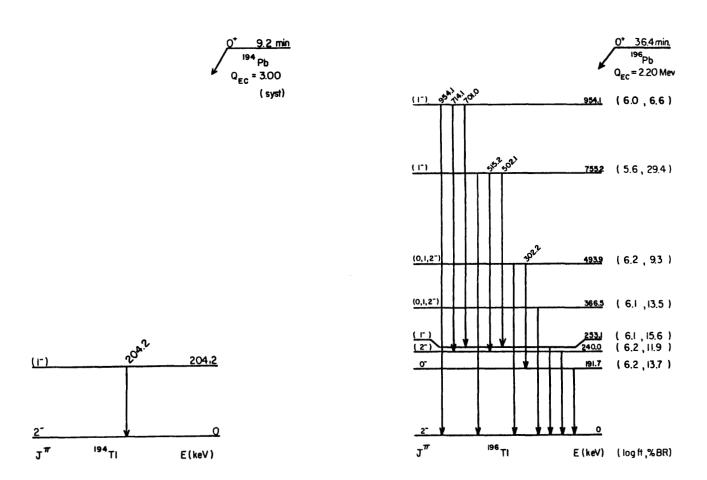


Figure 1. Decay scheme of 195mPb (13/2⁺) based primarily on previous in-beam and decay studies and substantiated in this study.



Figures 2(a) and 2(b). Decay schemes of ¹⁹⁴Pb(9.2m) and ¹⁹⁶Pb(36.4m).

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