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The nuclei near the doubly magic ²⁰⁸Pb are predicted to exhibit various interesting structural phenomena. However, little experimental data are available in $Z > 82$, $N \leq 126$ mass region till date. Recently a few spectroscopic investigations on the proton rich lighter Francium ($Z = 87$) isotopes ($A = 206$ to 209) have been made [1-4]. Wealth of nuclear phenomena from core excitation populated single particle states to the existence of shears band in these extreme proton rich heavy nuclei were observed. Although our experiment was aimed at exploring the nuclear structure of ²⁰⁸Fr [4], the yield of ²¹⁰Fr at 88 MeV was found to be significant to establish its level scheme. Relevant details of our experiment have been reported in ref. [4].

Based on the earlier observation[5] of a couple of low lying transitions connecting the 6⁺ ground state of ²¹⁰Fr, and a few strong transitions[3], which could not be assigned to other Fr isotopes, the excitation function studies of ²¹⁰Fr at three different energies are done, and found to be in good agreement with similar studies made from independent offline decay analysis reported earlier[4]. Based on our results, a preliminary level scheme for ²¹⁰Fr is established for the first time as shown in the Fig. 1. From our $\gamma\gamma\Delta T$ correlation analysis, we could find only one isomeric transition with 41.4 ± 2.1 ns half life. Further refinement of analysis, interpretation of the results based on nuclear structure calculations are currently undertaken.

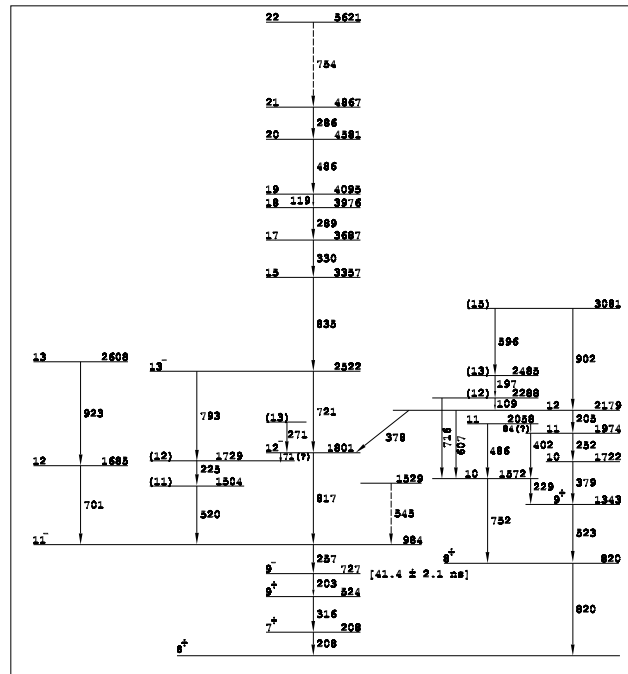


Figure 1: Tentative level scheme of ²¹⁰Fr

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