

## Improved limits on $\beta$ +EC and ECEC processes in $^{112}\text{Sn}$

New limits on  $\beta$ +EC and ECEC processes in  $^{112}\text{Sn}$  have been obtained using a 380 cm<sup>3</sup> HPGe detector and an external source consisting of 100 g enriched tin (94.32% of  $^{112}\text{Sn}$ ). A limit with 90% C.L. on the  $^{112}\text{Sn}$  half-life of  $1.3 \cdot 10^{21}$  y for the ECEC(0 $\nu$ ) transition to the 0+3 excited state in  $^{112}\text{Te}$  (1871.0 keV) has been established. This transition is discussed in the context of a possible enhancement of the decay rate. The limits on other  $\beta$ +EC and ECEC processes in  $^{112}\text{Sn}$  were obtained on the level of  $(0.1-1.6) \cdot 10^{21}$  y at the 90% C.L. In addition, it has been demonstrated that, in the future larger-scale experiments, the sensitivity to the ECEC(0 $\nu$ ) processes for  $^{112}\text{Sn}$  can reach the order of  $10^{26}$  y. Thus there is a chance of detecting the  $\beta$ +EC(2 $\nu$ ) transition of  $^{112}\text{Sn}$  to the ground state and ECEC(2 $\nu$ ) transition to the 0+1 excited state.

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