Half-life measurements of several states in $^{95,97,100,104}$Zr, $^{106}$Mo and $^{148,150}$Ce J.K. HWANG, A.V. RAMAYYA, J.H. HAMILTON, Vanderbilt Univ., Y.X. LUO, Vanderbilt Univ./LBNL, A.V. DANIEL, G.M. TER-AKOPYAN, JINR, J.D. COLE, INEL, S.J. ZHU, Tsinghua Univ. — Half-lives ($T_{1/2}$) of several states in $^{95,97,100,104}$Zr, $^{106}$Mo and $^{148,150}$Ce which decay by delayed $\gamma$ transitions, were determined from time-gated triple $\gamma$ coincidence method. Transition energy dependent effects such as time-walks, time-jitters, amplitude-walks and possible timing fluctuation of Ge detectors that contribute to the width of time window are taken into consideration. It is shown that the normalized triple $\gamma$ coincidence counts (the inverse of N1) of two prompt cascades with the similar transition energies are similar. Also, it is observed that the real triple $\gamma$ coincidence counts in the prompt cascades change systematically along with the change of the coincidence time-window and three transition energies. The half-lives of the states in the delayed cascades are determined by using the prompt cascades with the similar transition energies as delayed cascades. The half-life of $2^+$ state in $^{104}$Zr is measured to be 1.9(2) nsec. The obtained B(E2;0$^+ \rightarrow 2^+ $(e$^2$b$^2$) value and quadrupole deformation ($\beta_2$) are 2.0(2) (e$^2$b$^2$) and 0.47(5). It is reported that, except $^{102}$Sr, $^{104}$Zr($\beta_2$=0.47(5)) has the most deformed $2^+$ state among medium and heavy even-even nuclei.

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