7.2 Isotopes usable without Coincidence Correction

Three isotopes with leading single-photon emission (marked cyan) are free of time-coincidence correlation because photons de-excites from long half-life meta-stable daughter isotope levels $t^m_{1/2}$ longer than time-resolution of shaping amplifier of 6-10 μs part of HPGe system. Although the electron-capture decay induced x-rays with relative high intensities (Sn & Cd) the are not in time-coincidence (see also Table 1)

isotope reference Q_ε, Q_β MeV $t_{1/2}$	β-, ε-decay, IT E_α, E^{max}_β, $(\bar{E}_\beta)$ MeV	α-, β-, ε- *branch* intensity %	daughter-nuclide & E_γ γ-ray transitions to final level half-life ($t^m_{1/2}$) for metastable levels keV	E-list in I-order keV	γ- & X- intens. %
$^{137}_{55}$**Cs** NDS:108,2173,2007	→ β^-: 1.17563$_{17}$ → β^-: 0.51397$_{17}$ → β^-: 0.89213$_{20}$ (0.1871$_{10}$)	β^- : 100% 5.30$_{20}$ 94.70$_{20}$ 5.8$_3$E-4	Note: data set completely → $^{137}_{56}$Ba → γ : 661.657^{M4,int}(2.552$_1$m) → γ : 283.5 → X : ΣK_α → X : K_{α_1} → X : K_{α_2} → X : ΣK_β → X : K_{β_1} → X : K_{β_2}	661.657$_3$ 283.5$_1$ 32.061 32.194 31.817 36.40 36.358 37.255	85.10$_{20}$ 5.8$_8$E-4 5.63 3.64$_{10}$ 1.99$_5$ 0.885$_5$ 0.672$_{18}$ 0.213$_6$
Q_{β^-}=1.17563$_{17}$ 30.08$_9$ y	$\alpha^{661}_t = 0.1097$		→ X : Σ L	4.47	1.03$_3$
int=^{60}Co(662.24, SE); ^{241}Am(662.40, 0.000364%)					
$^{113}_{50}$**Sn** NDS:111,1471,2010	→ ε : → ε : → ε : → ε :	ε: 100% 97.79 2.21 0.00103	Note: data set completely → $^{113}_{49}$In → γ : 391.698^{M4} (99.476$_4$m) → γ : 255.134, 391.698 → γ : 638.03(.33ns), 391.698 → γ : 382.90, 255.134, 391.698	391.698$_3$ 255.134$_{10}$ 638.03$_8$ 382.90$_8$ 646.830$^{pcd}_{10}$	64.97$_{17}$ 2.11$_8$ 9.7$_4$E-4 6.0$_3$E-5 4.0$_{20}$E-6
Q_ε=1.0366$_{27}$ 115.09$_3$ d	$\alpha^{391}_t = 0.557$ $\alpha^{391}_K = 0.448$		→ X : ΣK_α → X : K_{α_1} → X : K_{α_2} → X : ΣK_β → X : K_{β_1} → X : K_{β_3} → X : K_{β_2} → X : Σ L	24.14 24.21 24.00 27.38 27.276 27.238 27.863 3.29	79.9 51.8$_{15}$ 28.08$_8$ 16.1 9.0$_3$ 4.66$_{14}$ 2.39$_7$ 8.6$_3$
$^{109}_{48}$**Cd** NDS:107,355,2006	→ ε :	(ε: 100%) 100	Note: data set completely → γ : 88.034^{E3} (39.6s)→$^{109}_{47}$Ag → X : ΣK_α → X : K_{α_1} → X : K_{α_2} → X : ΣK_β → X : K_{β_1} → X : K_{β_2} → X : K_{β_3}	88.0336$_1$ 22.103 22.163 21.99 25.038 24.948 25.455 24.912	3.70$_{10}$ 85.9 56.1$_{18}$ 29.8$_{10}$ 16.3 9.2$_3$ 2.31$_7$ 4.80$_{15}$
Q_ε=0.2143$_{20}$ 461.4$_{12}$ d	$\alpha^{88}_t = 26.7$ $\alpha^{88}_M = 2.48$ $\alpha^{88}_L = 12.19$ $\alpha^{88}_K = 11.56$				