Timing at JYFL

Henryk Mach

Medical and Scientific Time Imaging Consulting
Sweden

Beta-Ge-Labr3:

- The experimental setup and aims were the same as at ISOLDE

In-beam spectroscopy

We have used a mixed Ge and BaF2 array (experiments 2001 and 2002)


SCIONIX HOLLAND
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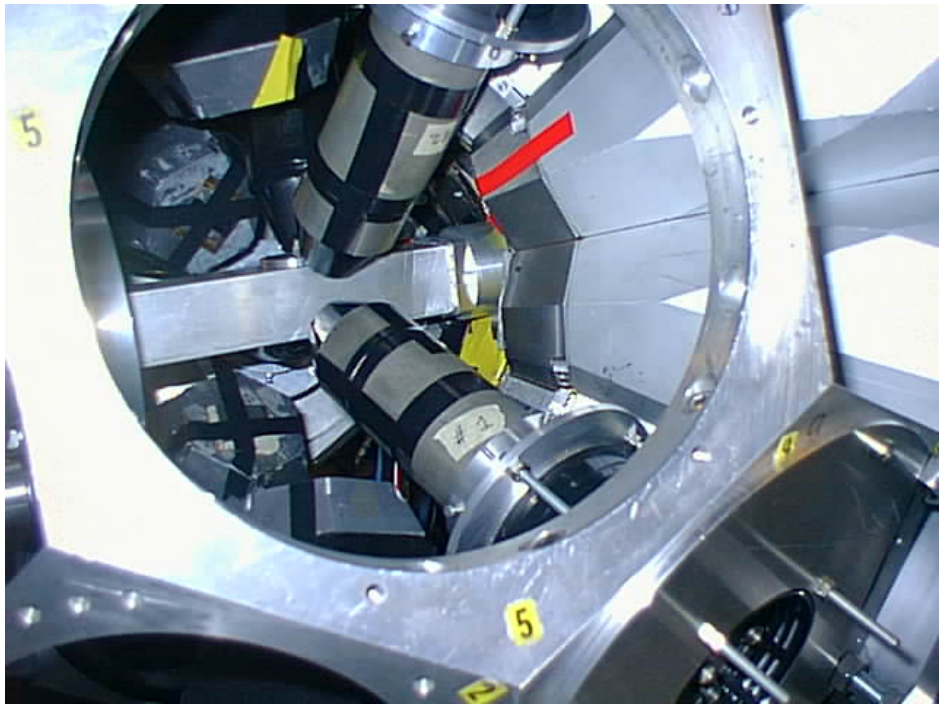
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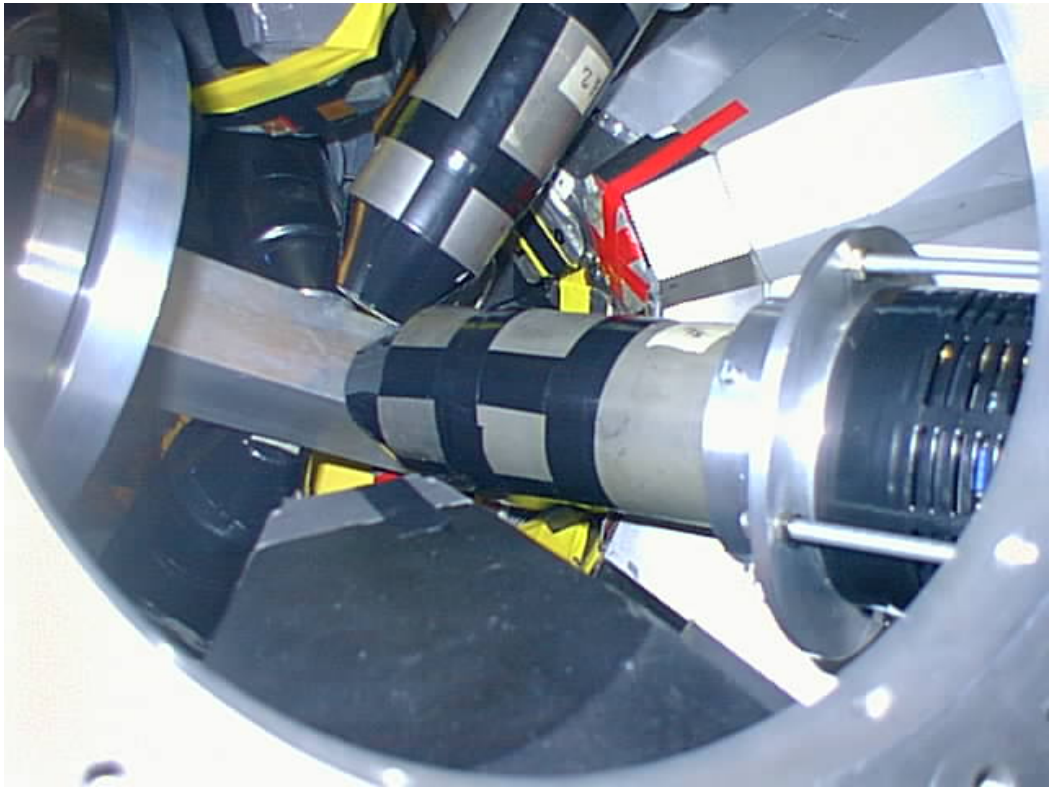
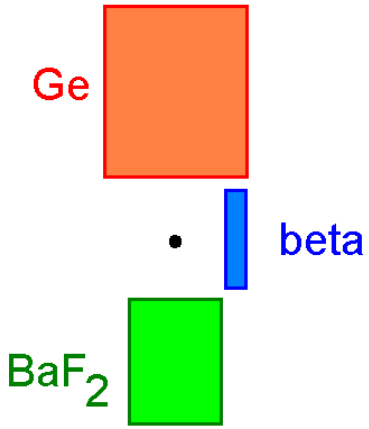
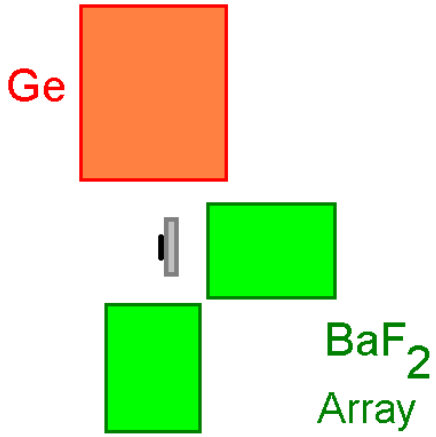
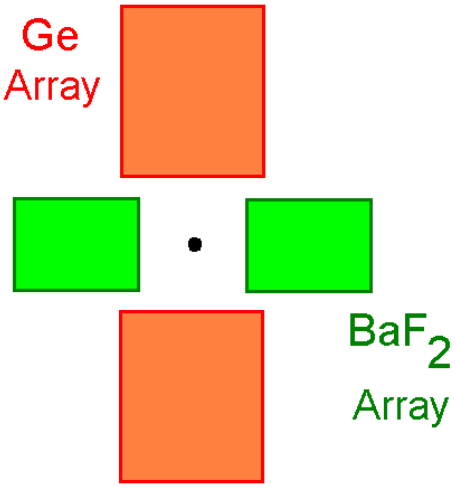








Beta decay:

Beta-gamma-gamma

Beta-Ge-Ge

Beta-Ge-BaF_2

5 nuclei/s

Isomeric decay:

gamma-gamma

Ge-BaF_2

BaF_2-BaF_2

10 isomers/min

In-beam spectroscopy:

Gamma-gamma-gamma-gamma

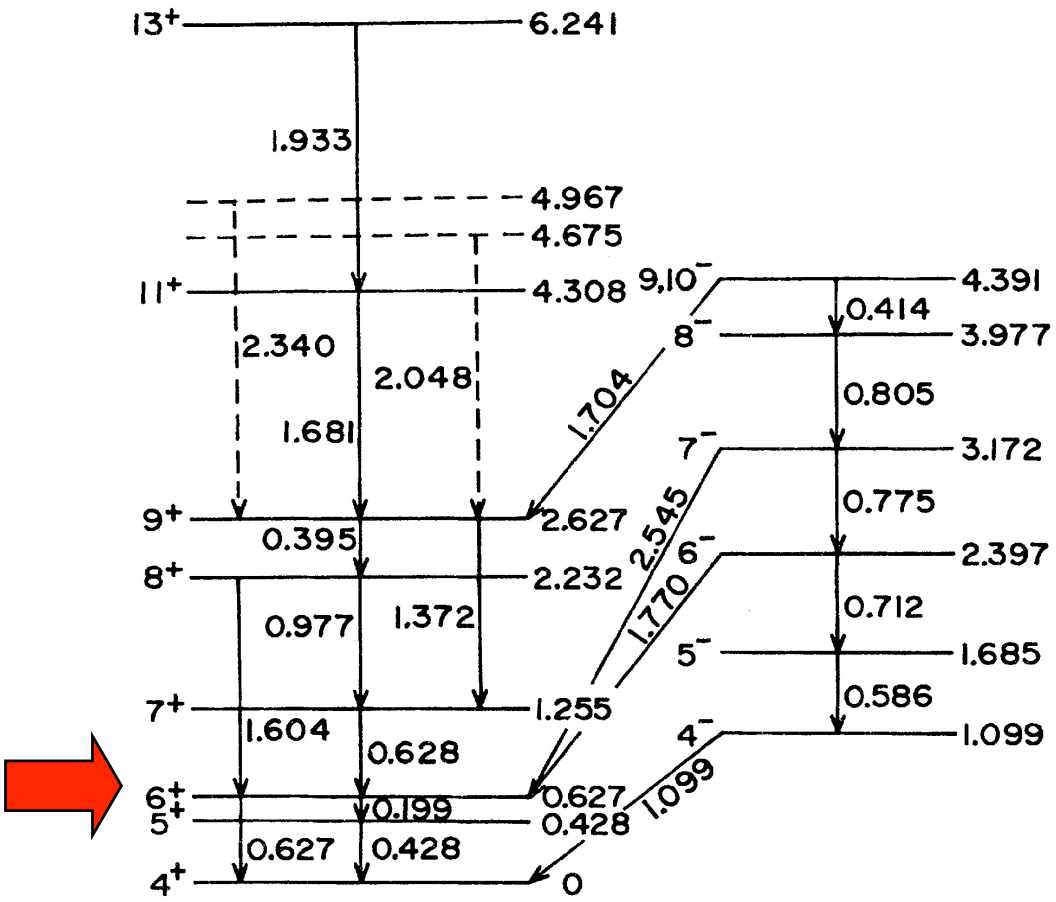
Ge-Ge-Ge-BaF_2

Ge-Ge-BaF_2-BaF_2

Ge-BaF_2-BaF_2-BaF_2

More experience is needed

Fast timing in the in-beam spectroscopic studies; the test case of ^{48}V

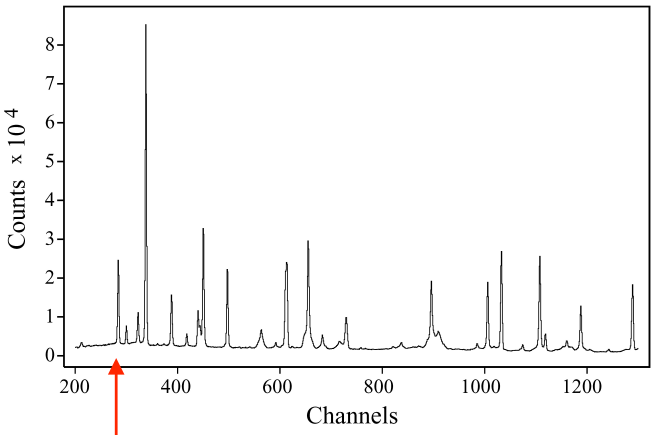


Partial decay scheme of 48V, from J.A. Cameron et al. PRC 44 (1991) 2358

The experiment was performed at the Jyvaskyla Cyclotrone using an array of 4 small BaF_2 detectors and pre-Jurosphere array. It included a 1 day test measurement on $^{40}Ca(^{14}N, 2pn)^{51}Mn$, which produced also ^{48}V.

The measurement is of the 6+ state via triple coincidences:

199 - 628 - 428 keV gamma rays s in the Ge - BaF_2 -BaF_2(t) detectors.



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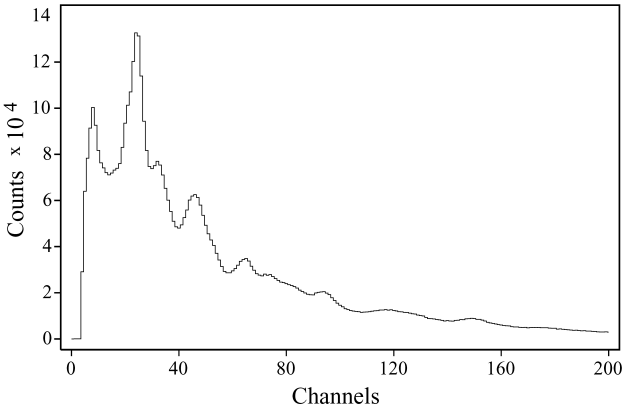

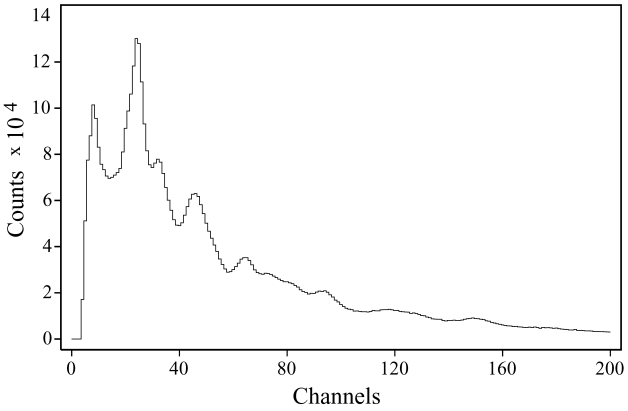

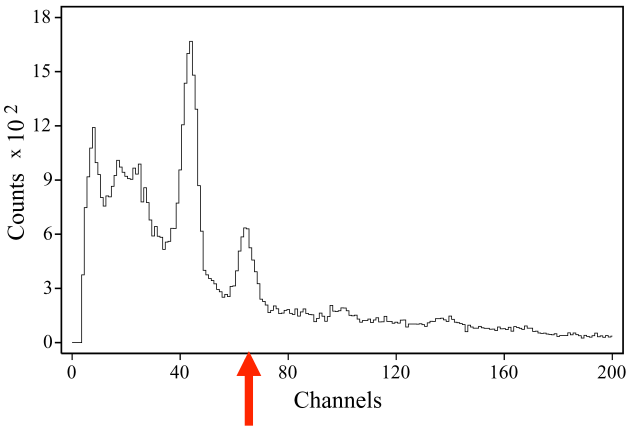

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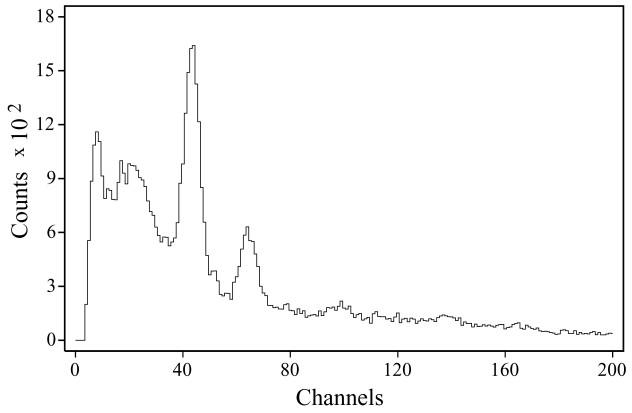
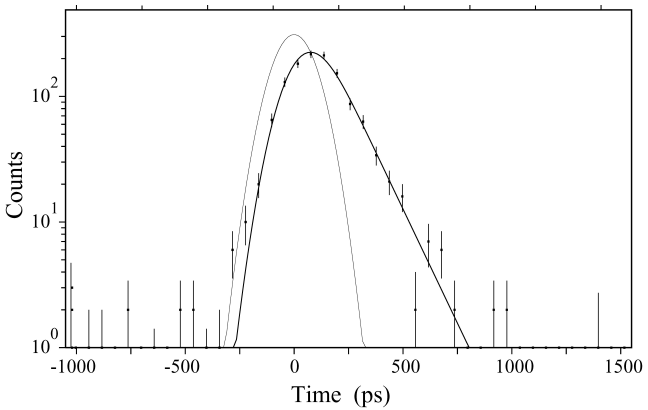
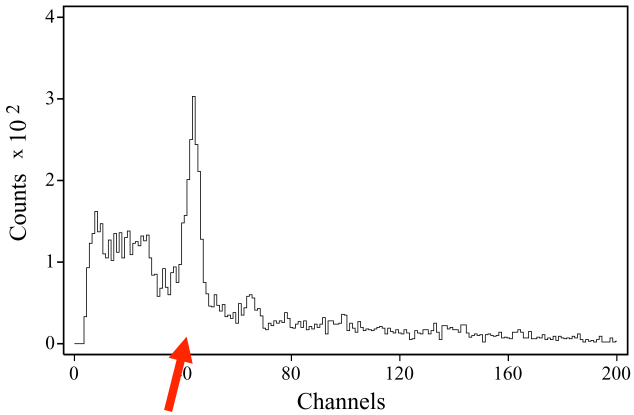




The half-life of the 628 keV level in 48V is

$T_{1/2}$ = 77(7) ps



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Measured half-lives:

51Mn	3680 keV level:	1760(40) ps	previous:	1.5(2) and 1.43(.27) ns
48V	308 keV level:	7.3(6) ns		7.11(4) ns
48V	421 keV level:	< 135 ps		< 1 ns
48V	518 keV level:	2.74(6) ns		2.72(6) ns
48V	628 keV level:	77(7) ps		75(6) ps
48Cr	3553 keV level:	2.7(5) ns		3.3(8) ns
51Cr	2255 keV level:	52(9) ps		45.8(14) ps

The new timing detectors would provide about 20 times higher coincidence efficiency for the same Ge array.

That allows to collect quadrupole coincidences.