

Experimental setup at PSI

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Beam schedule



Beam Allocations 2023

ay			Ju		une		July				August				September				October				November				
I	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
	0	4	7	7	3	7	7	3	7	6	7	4	4	7	7	6	7	3	7	7	6	7	3	7	7	6	7
	May/15/23	May/22/23	May/29/23	Jun/5/23	Jun/12/23	Jun/19/23	Jun/26/23	Jul/3/23	Jul/10/23	Jul/17/23	Jul/24/23	Jul/31/23	Aug/7/23	Aug/14/23	Aug/21/23	Aug/28/23	Sep/4/23	Sep/11/23	Sep/18/23	Sep/25/23	Oct/2/23	Oct/9/23	Oct/16/23	Oct/23/23	Oct/30/23	Nov/6/23	Nov/13/23
	May/21/23	May/28/23	Jun/4/23	Jun/11/23	Jun/18/23	Jun/25/23	Jul/2/23	Jul/9/23	Jul/16/23	Jul/23/23	Jul/30/23	Aug/6/23	Aug/13/23	Aug/20/23	Aug/27/23	Sep/3/23	Sep/10/23	Sep/17/23	Sep/24/23	Oct/1/23	Oct/8/23	Oct/15/23	Oct/22/23	Oct/29/23	Nov/5/23	Nov/12/23	Nov/19/23
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																		OMC4DBD									
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																	Reference radii										

▶ 4 campaigns following each other that will share the same (MIXE) setup





MIXE frame



- 6 arms with 2-4 detector positions on each arm
- Each arm (somewhat) rotatable
- Detector positions on arm adjustable in angle/ position (not so easy) and distance to center (easy)
- Autofill system mounted on frame for a total of 12 detectors
- Electronics (NIM crate, CAEN HV power supply, VME crate) mounted on frame
- Cabling integrated into frame to the electronics



List of detectors Description

Owner Model ("name")

stat

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- List of detectors that we have for sure for the OMC4DBD campaign
- 60% MIXE PSI needs to be pumped during summer
- For muX/Reference Radii will have some more detectors (2x 100%, TIGRESS clover), but will most likely need to remove those beam times

32.4% coaxial	TUM		
90% REGe coaxial	TUM	GR9524 ("Reginal")	BigMac
 34% BEGe	TUM	BE3830/S ("3B")	BigMac
50% SEGe coaxial	JINR	GC5019 ("Vladimir")	BigMac
 50% SEGe coaxial	JINR	GC5019 ("Rasputin")	Electric
3x ~60% coaxial (Miniball cluster)	KU Leuven	-	Special
58% (remeasured) coaxial	KU Leuven	GC7023	BigMac
75% coaxial	KU Leuven	GC7520	BigMac
 20% BEGe To be potentially bought:	MIXE PSI	BE3820	BigMac
20% BEGe ? to be bought: 85% REGe co	MIXE PSI	BE3820	BigMac
60% REGe coaxial ? to be bought: 91% REGe co	MIXE PSI	GR6022	BigMac
70% REGe coaxial ? to be bought: 91% REGe co	MIXE PSI	GR7023	BigMac
or:			
70% REGe coaxial ? to be bought: 4x ~21% = 84	muX PSI	GR7023	BigMac
with addback) EUROGAM type clover		x 70 mm (length)	
? 顿动 승규 아이가	RadieeMemistry	ECUC 35-2004 P	SDABSIRCK (90°, i.e.
or:	PSI		horizontal)
? 5% planar? ? to be bought: clover (same as above)	Radiochemistry	GL0520R? Same as above	Dipstick (~45°) Special
? to be bought: 80-90% REGe coaxial	KU Leuven	GEM80P4-95 / GEM90P4-95?	BigMac
100% coaxial	IFIN-HH Romania	GR10024	BigMac
100% coaxial	IFIN-HH Romania	GR10024	BigMac
4x ~38% = 152% (~221% with addback) TIGRESS clover	IFIN-HH Romania	N-type, 60 mm (diameter) x 90 mm (length)	Special
X TIGRESS clover (same as above?)	ELI-NP Romania	Same as above	Special
X TIGRESS clover (same as above?)	ELI-NP Romania	Same as above	Special

Short beamtime in May



We had a short beamtime that just finished and took some data with detectors given on the previous slide

- Not much time spent on getting the best performance of detectors
- Some work needed during the summer
- Decent efficiency of full array, detectors ≥15 cm away

Array efficiency:

938 keV: 1.705% 979 keV: 1.537% 2500 keV: 0.883% 2642 keV: 0.913% 5778 keV: 0.254% 5962 keV: 0.251%

Detector	Gap	Peaking	Tau table	Tau factor	FWHM @ 1332 keV
Ge01	300	1700	0	43	2.40
Ge02	400	1600	0	44	3.39
Ge03	300	1300	0	43	2.73
Ge04	300	1500	0	41	3.70
Ge05	200	1800	0	43	2.54
Ge06	500	1300	0	43	2.73
Ge07	200	1300	0	43	2.66
Ge08	300	1700	0	49	2.26
Ge09	400	1600	0	44	2.52
Ge10	400	1650	0	43	3.06

With the parameters from last year, the spectra look quite alright. Ge02 and Ge04 are the main candidates for retuning.

Switch to OMC4DBD beamtime



- We will certainly need to do some small adjustments to the array after the ReferenceRadii beamtime to get ready for OMC4DBD
 - Remove some detectors
 - Adjust angle of arms, distances to center
 - If avoidable let's not adjust angles/positions of detectors on the arms and let's keep detectors at their places
- From experience this will take about half a day to get ready