A Pseudo-Detector Definition

In image reconstruction and spectral extraction processes, PSD events and multi-detector events are binned into a number of *pseudo-detectors*. Pseudo-detector numbers are defined as follow.

#0 - #18 are number for the single and the PSD (any flag) events.

#20001 - #21718 are pseudo detectors for the double events. The first digit, indicating the multiplicity (i.e., 2), is followed by four digits, two for each detector numbers. E.g., double events which hit detectors 4 and 15 are binned into pseudo-detector number 20415.

#3000001 - #3161718 are pseudo detectors for the tripple events. The first digit, indicating the multiplicity (i.e., 3), is followed by six digits, two for each detector numbers. E.g., tripple events which hit detectors 0, 13 and 6 are binned into pseudo-detector number 3001306.

#1900 - #1918 are pseudo-detector numbers for the single events, excluding PSD events.

#1000 - #1018 are pseudo-detector numbers for the events with PSD flag = 0, i.e., localized events.

#1100 - #1118 are pseudo-detector numbers for the events with PSD flag = 1, i.e., events with energy deposits at different locations in the detector.

The above scheme can also be easily extended if necessary for higher multiplicities, or in cases where different types of events are binned together (e.g., single + PSD events).

It is very important to note that despite the apparent flexibility of this definition scheme only one set of pseudo detectors will be first used in practice, because of the difficulties of producing the corresponding response files. Table 4 gives the current proposal for the standard definition of pseudo detectors.

Table 4: Pseudo-detector file **spi_pseudo_detector_D142.fits**

Pseudo Det. #	Pseudo Det. ID	Pseudo Det. #	Pseudo Det. ID	Pseudo Det. #	Pseudo Det. ID	Pseudo Det. #	Pseudo Det. ID	Pseudo Det. #	Pseudo Det. ID
0	0	30	20203	60	21718	90	1905	120	1016
1	1	31	20209	61	3000102	91	1906	121	1017
2	2	32	20210	62	3000203	92	1907	122	1018
3	3	33	20211	63	3000304	93	1908	123	1100
4	4	34	20304	64	3000405	94	1909	124	1101
5	5	35	20311	65	3000506	95	1910	125	1102
6	6	36	20312	66	3000601	96	1911	126	1103
7	7	37	20313	67	3010209	97	1912	127	1104
8	8	38	20405	68	3010607	98	1913	128	1105
9	9	39	20413	69	3010708	99	1914	129	1106
10	10	40	20414	70	3010809	100	1915	130	1107
11	11	41	20415	71	3020311	101	1916	131	1108
12	12	42	20506	72	3020910	102	1917	132	1109
13	13	43	20515	73	3021011	103	1918	133	1110
14	14	44	20516	74	3030413	104	1000	134	1111
15	15	45	20517	75	3031112	105	1001	135	1112
16	16	46	20607	76	3031213	106	1002	136	1113
17	17	47	20617	77	3040515	107	1003	137	1114
18	18	48	20618	78	3041314	108	1004	138	1115
19	20001	49	20708	79	3041415	109	1005	139	1116
20	20002	50	20718	80	3050617	110	1006	140	1117
21	20003	51	20809	81	3051516	111	1007	141	1118
22	20004	52	20910	82	3051617	112	1008		
23	20005	53	21011	83	3060718	113	1009		
24	20006	54	21112	84	3061718	114	1010		
25	20102	55	21213	85	1900	115	1011		
26	20106	56	21314	86	1901	116	1012		
27	20107	57	21415	87	1902	117	1013		
28	20108	58	21516	88	1903	118	1014		
29	20109	59	21617	89	1904	119	1015		