1 Calorimeter

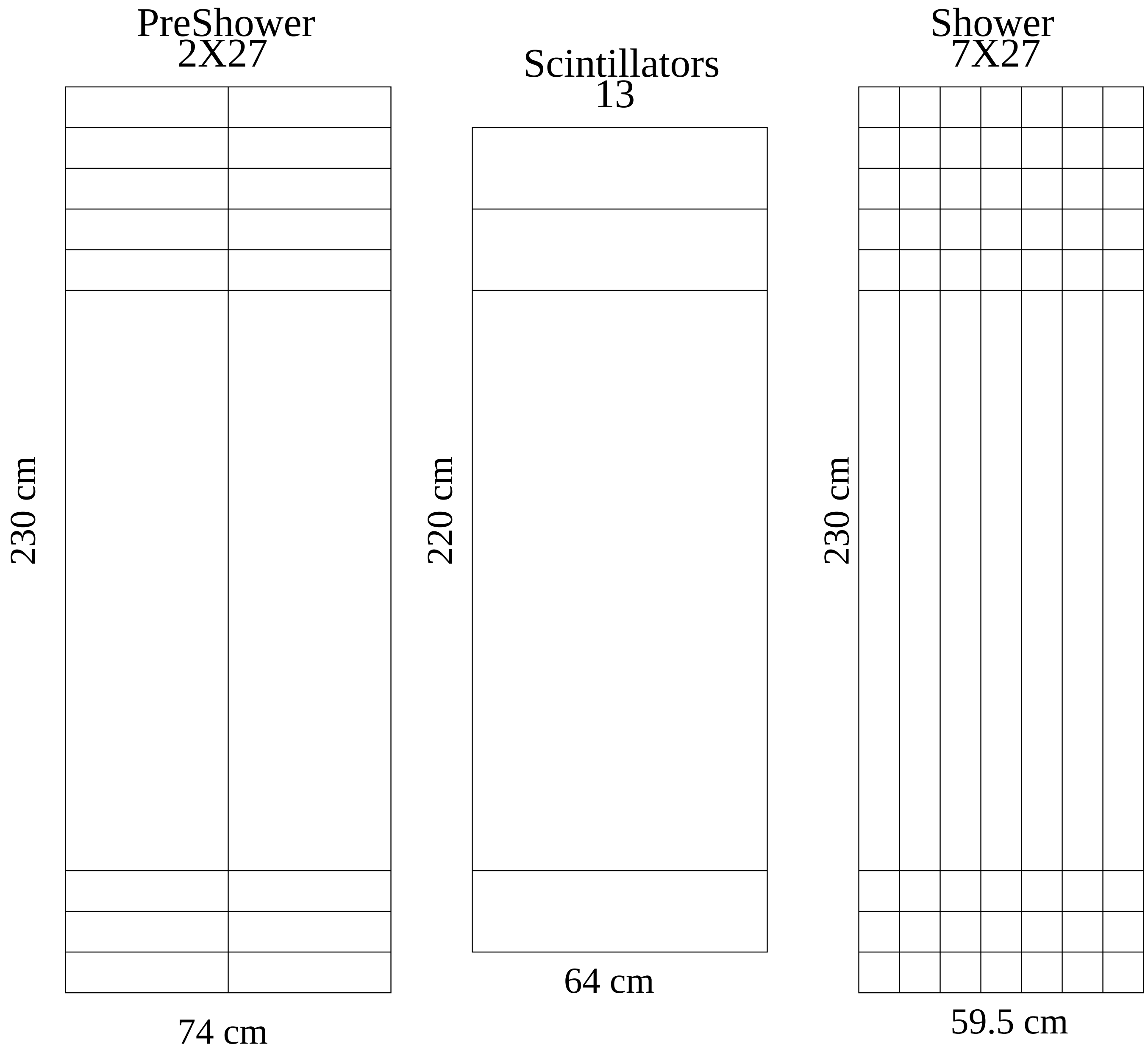

Figure 1: BigBite calorimeter(front view)

PreShower: 2x27 blocks 8.5X37X8.5 cm.

Scintillator: 13 blocks 17X64X4 cm.PMT-s on each side.

Shower: 7X27 blocks 8.5X8.5X37 cm.

Total Shower Class.

1. Amplitudes of each block of Shower:

B.ts.sh.a - array of 189 elements, amplitudes with pedestals.

B.ts.sh.a_p - array of 189 elements, pedestal substaracted amplitudes.

B.ts.sh.a_c - array of 189 elements, pedestal substaracted and calibrated amplitudes.

2. Amplitudes of each block of PreShower:

B.ts.ps.a - array of 189 elements, amplitudes with pedestals.

B.ts.ps.a_p - array of 189 elements, pedestal substaracted amplitudes.

B.ts.ps.a_c - array of 189 elements, pedestal substaracted and calibrated amplitudes.

3.Cluster information:

B.ts.sh.x - X position of Shower cluster.

B.ts.sh.y - Y position of Shower cluster.

B.ts.sh.e - Energy of Shower cluster.

B.ts.ps.x - X position of PreShower cluster.

B.ts.ps.y - Y position of PreShower cluster.

B.ts.ps.e - Energy of PreShower cluster.

For scintillator using standard scintillator class.

1. Amplitudes for each block:

B.s.la - array of 13 elements, amplitudes with pedestals for left PMT-s.

B.s.la_p - array of 13 elements, pedestal substaracted amplitudes for left PMT-s.

B.s.ra - array of 13 elements, amplitudes with pedestals for right PMT-s.

B.s.ra_p - array of 13 elements, pedestal substaracted amplitudes for right PMT-s.

2. Time information for each block:

B.s.lt - array of 13 elements, time for left PMT-s.

B.s.rt - array of 13 elements, time for right PMT-s.

For Total Sum and PreShower Sum don't have information in Total Shower class.
Using standard scintilator class (may be not best solution)

1.Total Sum:

B.sum.ra(B.sum.la) - array of 26 elements, amplitudes with pedestals.

B.sum.ra_p(B.sum.la_p) - array of 26 elements, pedestal substaracted amplitudes.

B.sum.rt(B.sum.lt) - array of 26 elements, Total Sum time.

1.PreShower Sum:

B.psum.ra(B.psum.la) - array of 26 elements, amplitudes with pedestals.

B.psum.ra_p(B.psum.la_p) - array of 26 elements, pedestal substaracted amplitudes.

B.psum.rt(B.psum.lt) - array of 26 elements, PreShower Sum time.

Scripts for testing Calorimeter are in
/adaqfs/home/adaq/sergey/BB_test/
What scripts doing:

ser_ps_hist.C
Read pedestal substracted ADC data for PreShower(PS).
select vertical tracks.
fit them and obtain cosmic peak value
calculate adjustment factors and put them into text files:
dat/adj_ps_L_xxxx.dat (for left PS modules)
dat/adj_ps_R_xxxx.dat (for right PS modules)
create postscript file: ps/PS_xxxx.ps, with fited cosmic amplitudes.
****
ser_sh_hist.C
Read pedestal substracted ADC data for Shower
select vertical tracks.
fit them and obtain cosmic peak value
calculate adjustment factors and put them into text files:
dat/adj_sh_xxxx.dat
create postscript file: ps/Shower_xxxx.ps, with fited cosmic amplitudes.
****
ser_sc.C
Read pedestal substracted ADC data for Scintillators.
select vertical tracks.
fit them and obtain cosmic peak value
calculate adjustment factors and put them into text files:
dat/adj_sc_L_xxxx.dat (for left PS modules)
dat/adj_sc_R_xxxx.dat (for right PS modules)
create postscript file: ps/sc_ampl_xxxx.ps, with fited cosmic amplitudes.
****
ser_sc_time.C
Read pedestal substracted ADC and TDC data for Scintillators
Create postscript file "ps/sc_time_xxxx.ps" with following plots:
time from Left PMT-s
time from right PMT-s
correlation beetwen left and right PMT time
correlation beetween amplitude and time

****

sum_time.C

Read pedestal substracted ADC and TDC data for Total Sum(TS)
Create postscript file "ps/sum_time.ps" with following plots:
total sum time
correlation beetween amplitude and time for TS

****

sum_test1.C

Script for testing TS.
Create correlations beetweenn each TS and each vertial pair of calorimeter modules, corresponding to that TS.
and put them into postscript file "ps/sum_test_xxxx.ps"

****

sum_test_eff.C

Another script for testing TS.
For each TS create 2D histogram
X-axes corresponding to colomns of calorimeter(1-7:Shower;8,9:PS)
Y-axes corresponding to rows of calorimeter(1-27)
contents of each bin corresponding to how often each module
make a contribution to that TS.
And put them into postscript file "ps/sum_test_eff_xxxx.ps"

****

psum_time.C

Read pedestal substracted ADC and TDC data for PS Sum
Create postscript file "ps/psum_time.ps" with following plots:
PS sum time
correlation beetween amplitude and time for PS sum

****

psum_test1.C

Script for testing PS sum.
Create correlations beetweenn each PS sum and each vertial pair of PS modules, corresponding to that PS sum.
and put them into postscript file "ps/sum_test_xxxx.ps"

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psum_test_eff.C

Another script for testing PS sum.
For each PS create 2D histogram
X-axes corresponding to colomns of PreShower
Y-axes corresponding to rows of calorimeter(1-27)
contents of each bin corresponding to how often each module
make a contribution to that PS sum.
And put them into postscript file "ps/psum_test_eff_xxxx.ps"

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sh_display.C

Event display for Shower.

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ser_peds.C

Calculate pedestals and their width for Shower, PS, Scintilators and TS
and put them into root file.

pedtofile.C

Read pedestals from root file created by previous script
and put them into text files in the form correspondig to database form.

"dat/ped/ped_ps.dat" PS pedestals

"dat/ped/ped_sh.dat" Shower pedestals

"dat/ped/ped_scin.dat" Scintillator pedestals

"dat/ped/ped_sum.dat" TS pedestals

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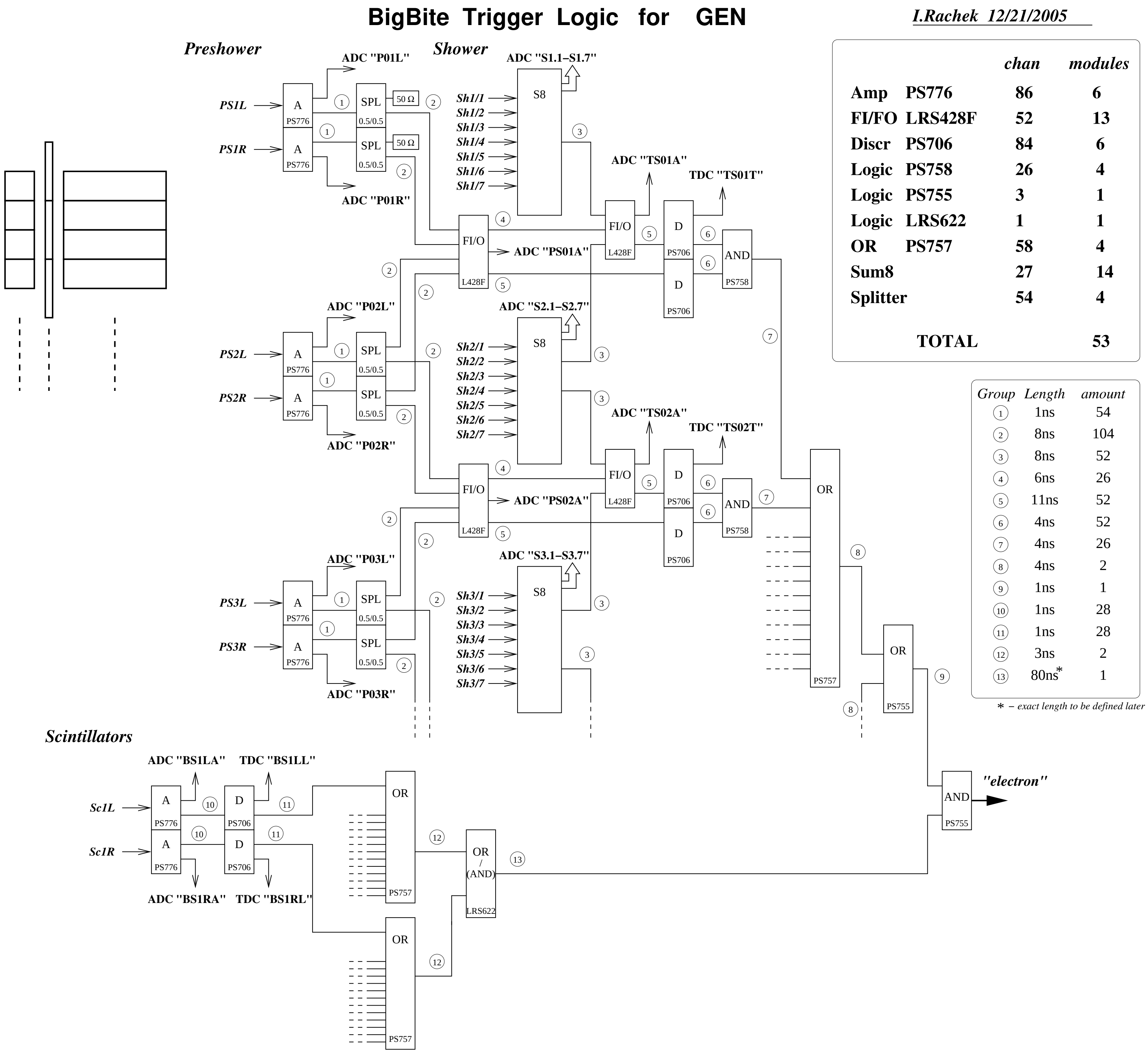

		chan	modules
Amp	PS776	86	6
FI/FO	LRS428F	52	13
Discr	PS706	84	6
Logic	PS758	26	4
Logic	PS755	3	1
Logic	LRS622	1	1
OR	PS757	58	4
Sum8		27	14
Splitter		54	4
TOTAL			53

Group	Length	amount
1	1ns	54
2	8ns	104
3	8ns	52
4	6ns	26
5	11ns	52
6	4ns	52
7	4ns	26
8	4ns	2
9	1ns	1
10	1ns	28
11	1ns	28
12	3ns	2
13	80ns*	1

Figure 2: BigBite trigger