Simulation for BES-II in 98' (SOBER)

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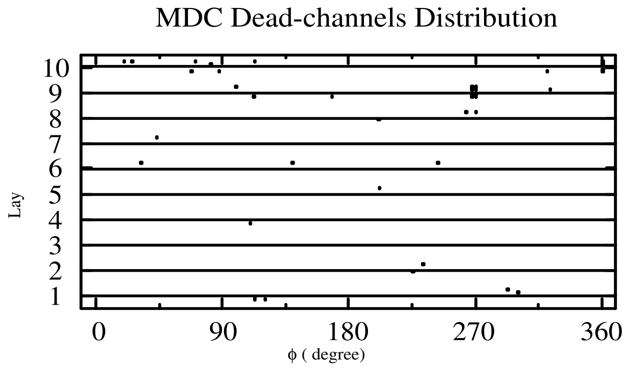
- ❑ Current statues for SOBER simulation
- ❑ Results on the sub-detector performance
- ❑ Summary and review of the present problems

- ❑ Data samples through out this talk are selected from data with run ranged from 11001 to 11099
- ❑ Calibration constants in ~runcal/v100/const and ~chengbs/bes2/const are used to reconstruct data and M.C. separately
- ❑ Two sets of constant files are generated. To reach them by the following sober cards:

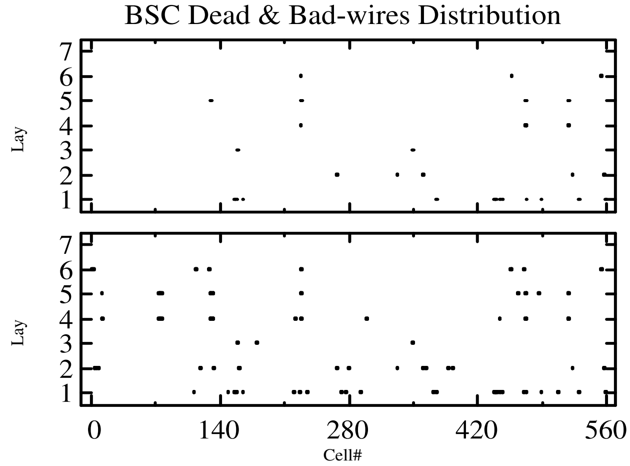
  *USRCON ~chengbs/bes2/const
  real_sim 011; /*for realization file brl_011.sobecons*/
  dead_cnl 011; /*for dead channel file dcl_011.sobecons*/
- ❑ In histogram, the solid line is for data while the dashed line for M.C.
- ❑ Two more sober cards are introduced to turn on/off the simulation of δ ray generated by μ

  ray_on/ray_off

RUN11001-11099

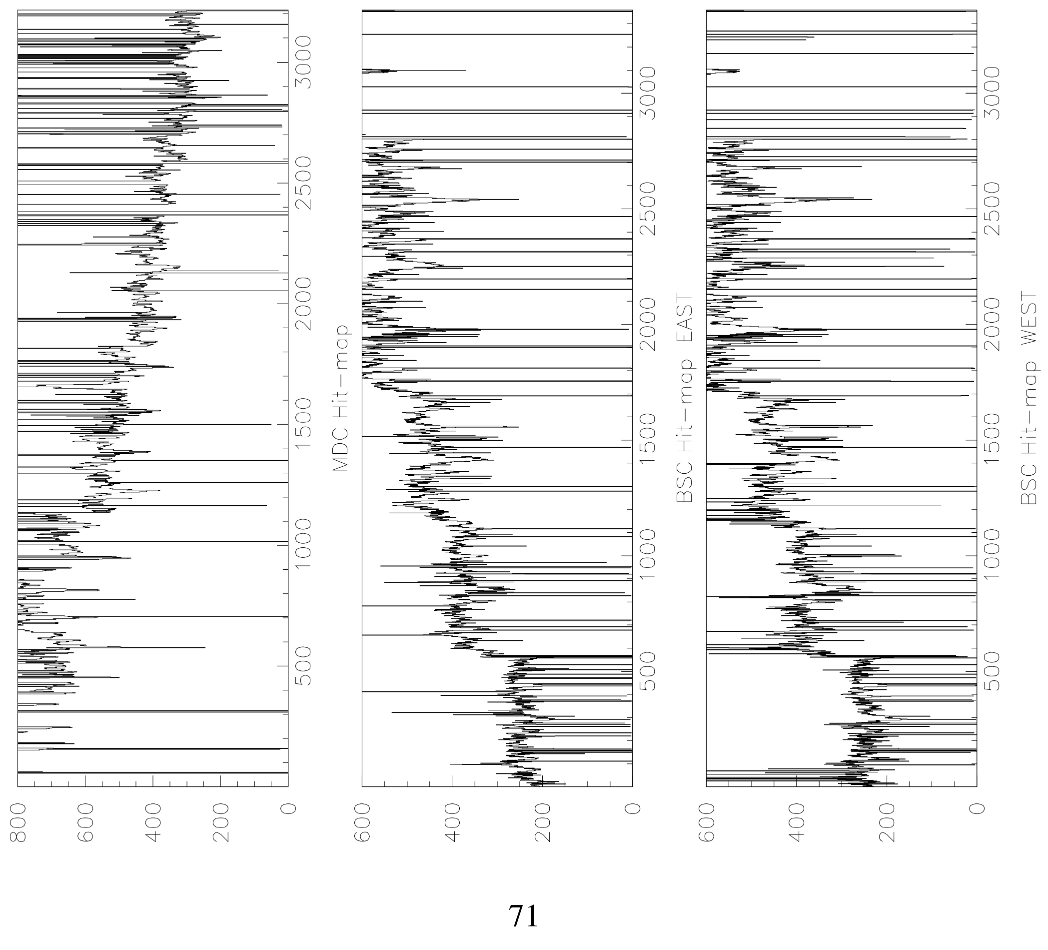


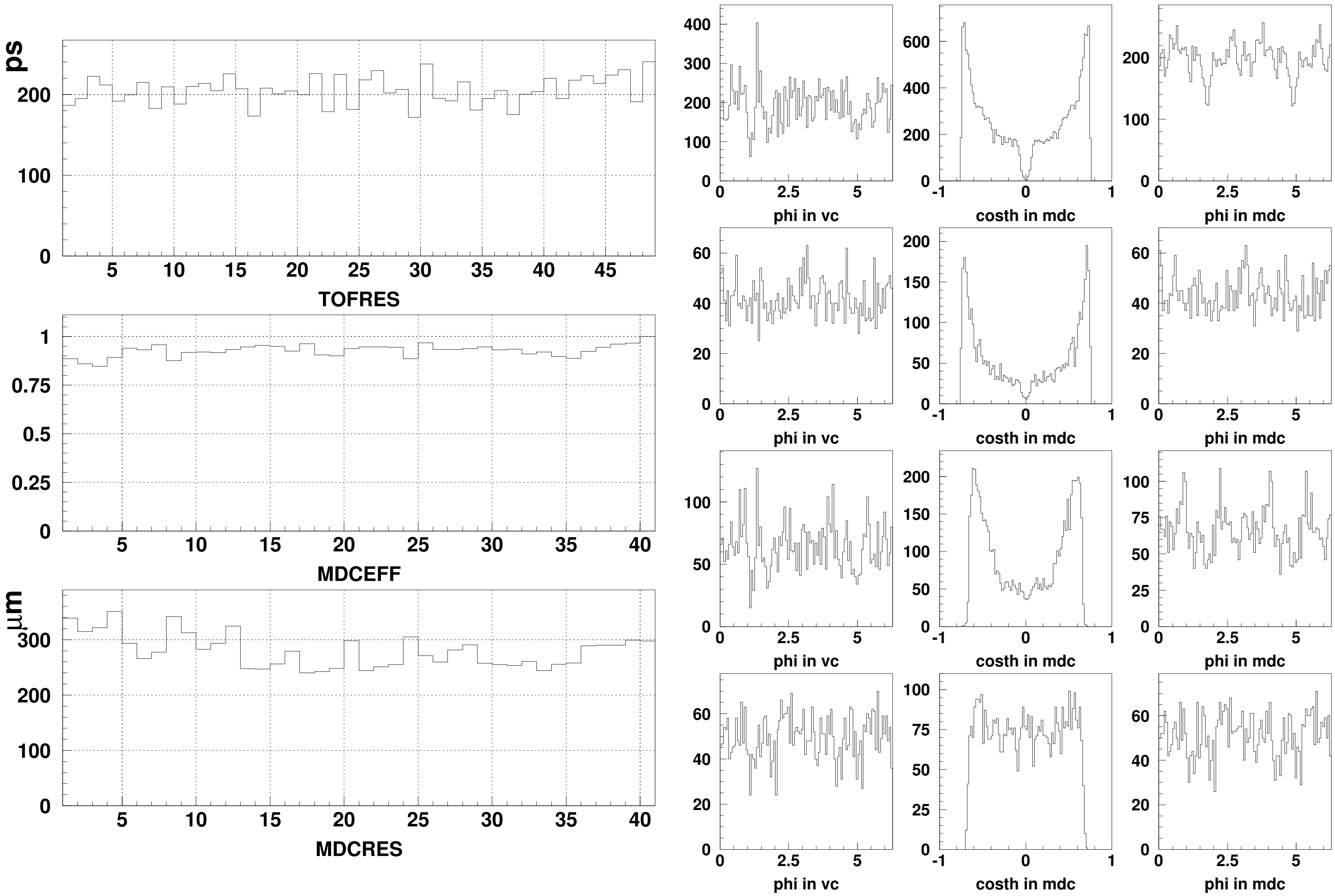
L	D-W	ALL
10	12	512
9	12	464
8	3	416
7	1	368
6	3	320
5	1	272
4	1	224
3	0	256
2	2	192
1	5	192
Tot:	40	3216

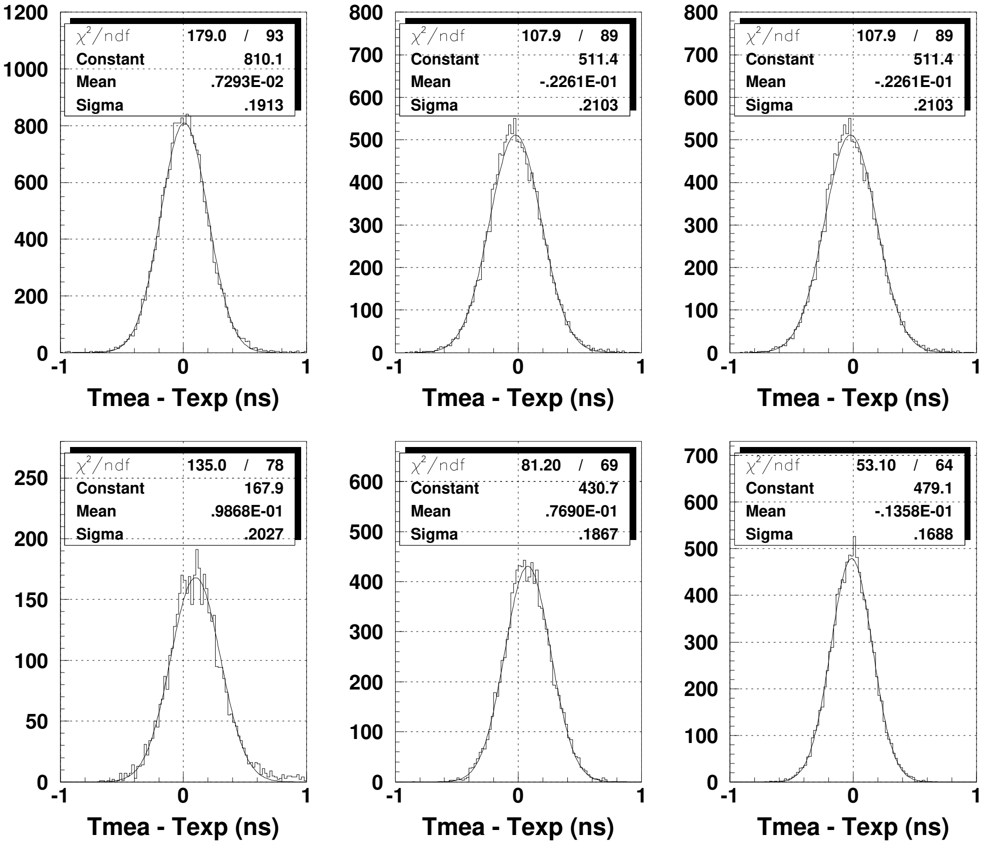


Lay	D-wire
6	3
5	7
4	4
3	2
2	5
1	14
Total:	35

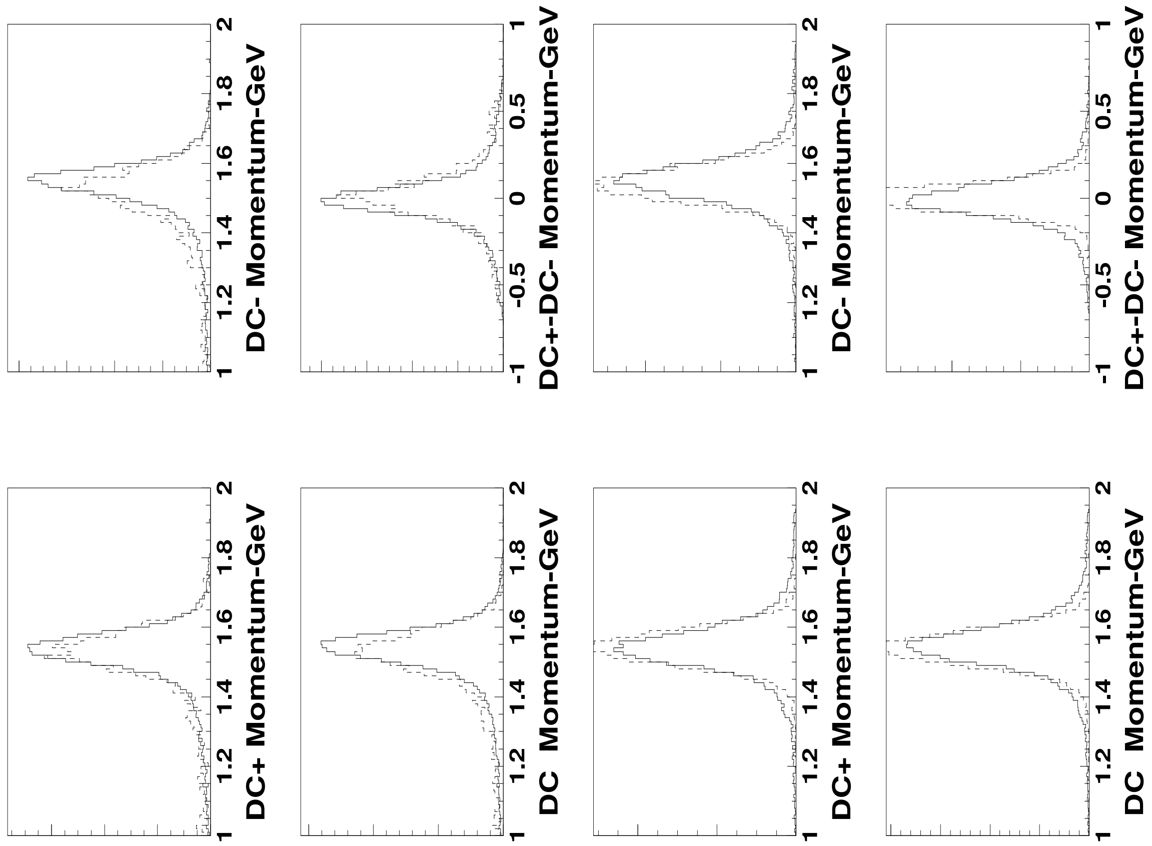
Lay	B-wire
6	13
5	17
4	19
3	3
2	16
1	26
Total:	94



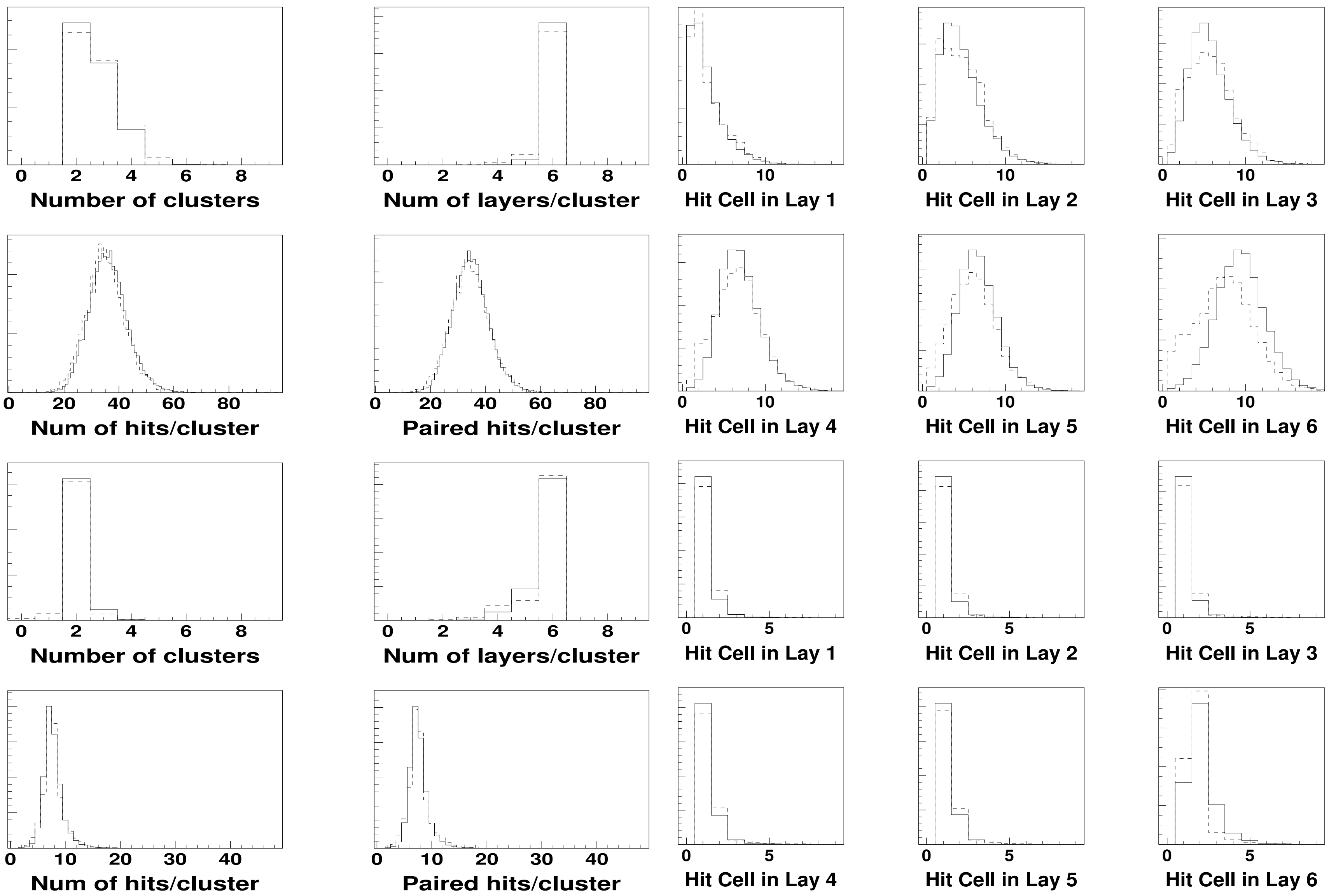

ps
TOFRES
MDCEFF
μm
MDCRES
phi in vc
costh in mdc
phi in mdc
phi in vc
costh in mdc
phi in mdc
phi in vc
costh in mdc
phi in mdc
phi in vc
costh in mdc
phi in mdc

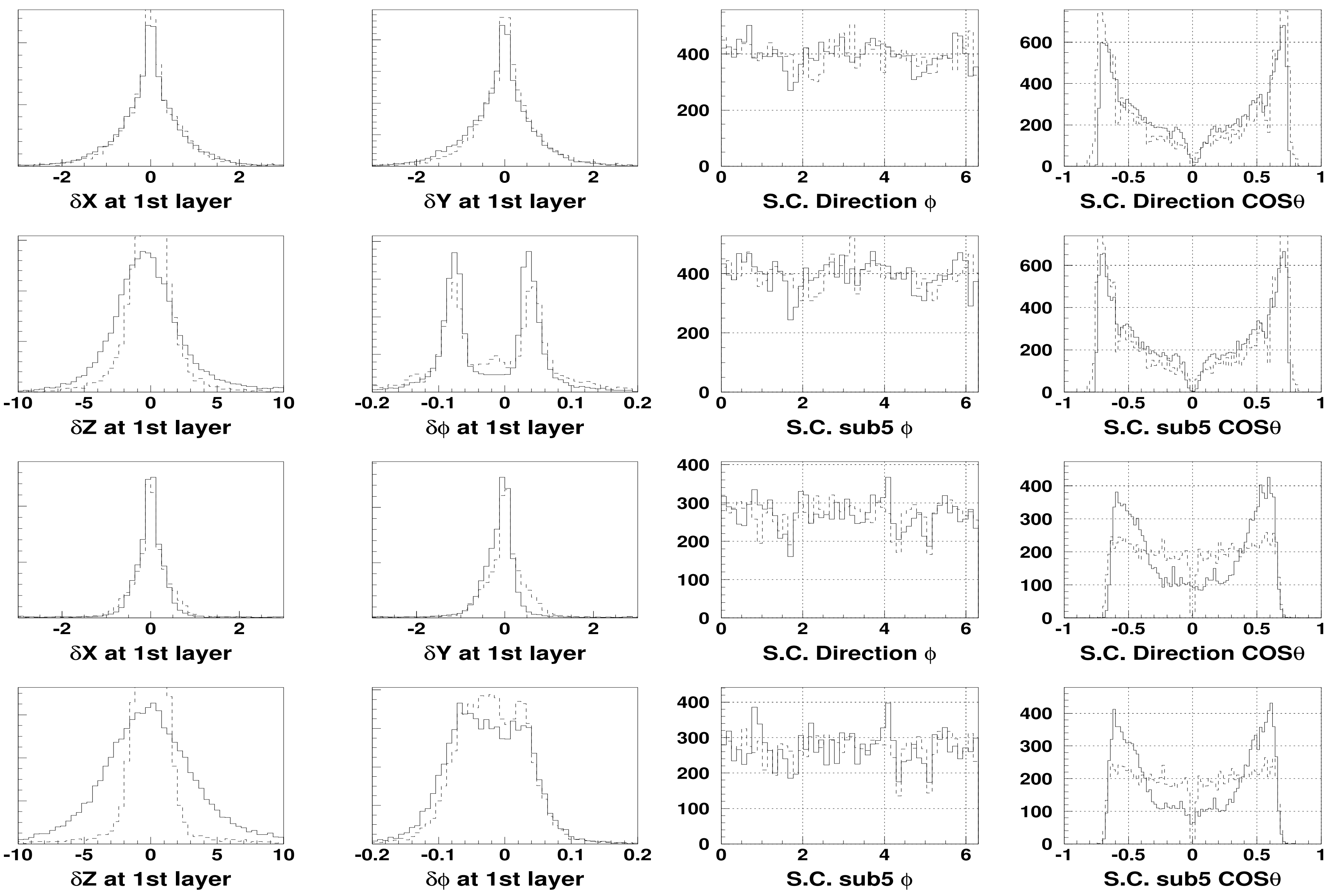


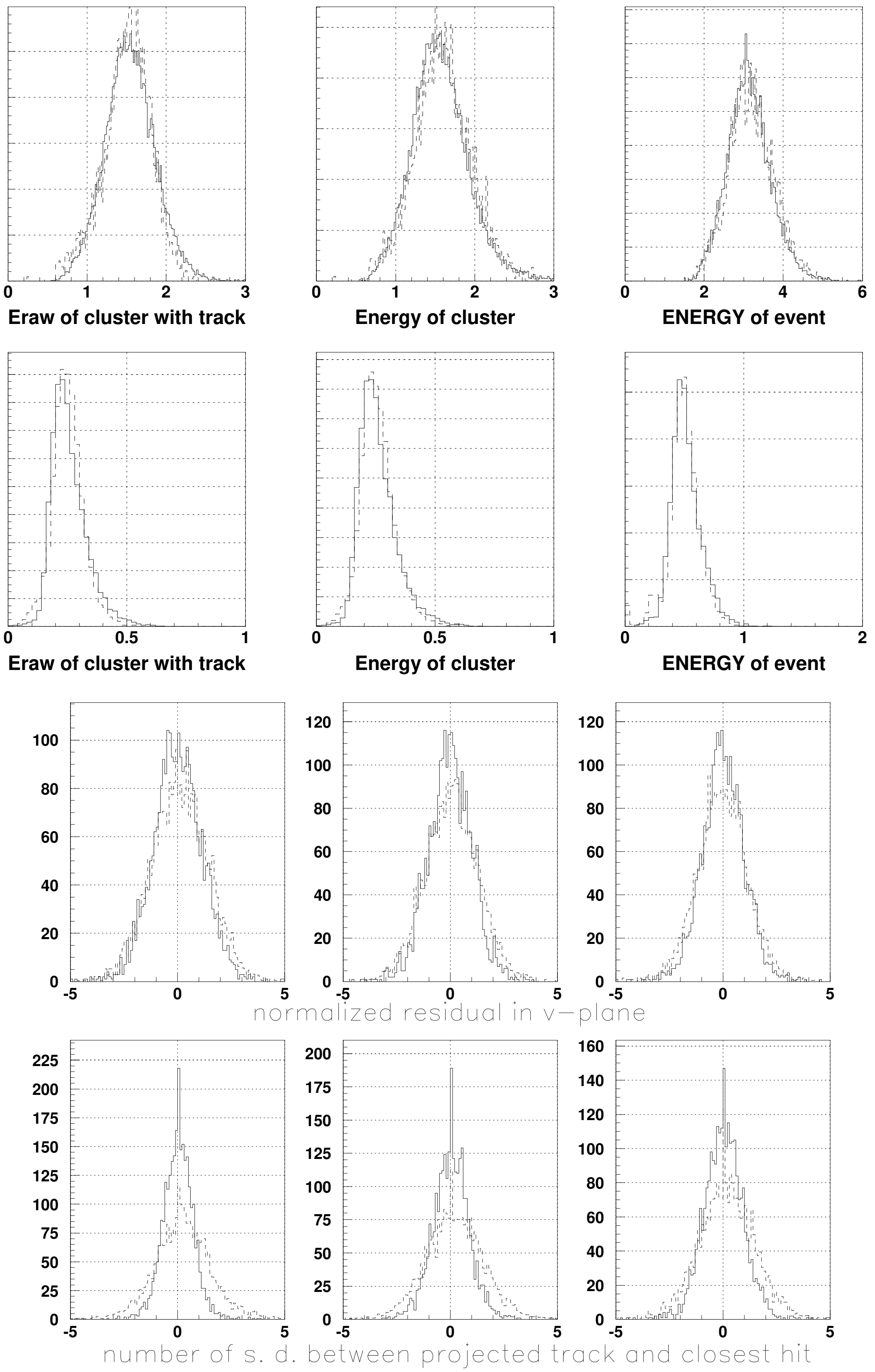
χ²/ndf 179.0 / 93
Constant 810.1
Mean .7293E-02
Sigma .1913
χ²/ndf 107.9 / 89
Constant 511.4
Mean -.2261E-01
Sigma .2103
χ²/ndf 107.9 / 89
Constant 511.4
Mean -.2261E-01
Sigma .2103
χ²/ndf 135.0 / 78
Constant 167.9
Mean .9868E-01
Sigma .2027
χ²/ndf 81.20 / 69
Constant 430.7
Mean .7690E-01
Sigma .1867
χ²/ndf 53.10 / 64
Constant 479.1
Mean -.1358E-01
Sigma .1688
Tmea - Texp (ns)
Tmea - Texp (ns)
Tmea - Texp (ns)
Tmea - Texp (ns)
Tmea - Texp (ns)
Tmea - Texp (ns)



DC- Momentum-GeV
DC+-DC- Momentum-GeV
DC- Momentum-GeV
DC+-DC- Momentum-GeV
DC+ Momentum-GeV
DC Momentum-GeV
DC+ Momentum-GeV
DC Momentum-GeV


0 2 4 6 8
Number of clusters
0 2 4 6 8
Num of layers/cluster
0 10
Hit Cell in Lay 1
0 10
Hit Cell in Lay 2
0 10
Hit Cell in Lay 3
0 20 40 60 80
Num of hits/cluster
0 20 40 60 80
Paired hits/cluster
0 10
Hit Cell in Lay 4
0 10
Hit Cell in Lay 5
0 10
Hit Cell in Lay 6
0 2 4 6 8
Number of clusters
0 2 4 6 8
Num of layers/cluster
0 5
Hit Cell in Lay 1
0 5
Hit Cell in Lay 2
0 5
Hit Cell in Lay 3
0 10 20 30 40
Num of hits/cluster
0 10 20 30 40
Paired hits/cluster
0 5
Hit Cell in Lay 4
0 5
Hit Cell in Lay 5
0 5
Hit Cell in Lay 6


δX at 1st layer
δY at 1st layer
S.C. Direction φ
S.C. Direction COSθ
δZ at 1st layer
δφ at 1st layer
S.C. sub5 φ
S.C. sub5 COSθ
δX at 1st layer
δY at 1st layer
S.C. Direction φ
S.C. Direction COSθ
δZ at 1st layer
δφ at 1st layer
S.C. sub5 φ
S.C. sub5 COSθ


Eraw of cluster with track
Energy of cluster
ENERGY of event
Eraw of cluster with track
Energy of cluster
ENERGY of event
normalized residual in v−plane
number of s. d. between projected track and closest hit

Event	$e^+e^- \to \gamma e^+e^-$	$e^+e^- \to \gamma \mu^+\mu^-$
Generator	12	26
Ecm(GeV)	3.097	3.097
Number of Events	5000	5000
$\lvert\cos(\theta)\rvert \leq$	0.75	0.75
CPU Time(seconds)		
SOBER	6933.2	603.6
DRUNK	1940.7	1923.8
SOBER + DRUNK + more user codes	8460.9	2428.6

- **The primary accordance between M.C. and real data have been reached for the events of $e^+e^- \to e^+e^-$ and $e^+e^- \to \mu^+\mu^-$ while there are still some divergences;**
- **The jobs (both SOBER and DRUNK) run in V10.0. Since more upgrades in V10.1, further efforts need to make to check the possible changes;**
- **So far, certain calibration file got from real data is put into use for M.C. data in V10.0. They need to be correctly calibrated;**
  eg: bsc$.sobecons, tof$.sobecons, ...
- **I strongly propose further work on the simulation should turn to SimBES as soon as possible.**