STUDY OF QUALITY OF HIGH ET DIJET EVENTS

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A. DIJET EVENTS WITH ET GREATER THAN 90 GeV

The quality of an event can be indicated by testing each jet for several conditions. To date the QCD group tests each jet for CH fraction, ratio of the Maximum cell and Second maximum cell energies and good agreement of energies measured by L1 and L2.

These tests are summarized by the value of the integral variable " Bad_Word".The lower three bits of "bad_word" are set according to the following table:

BIT		Set if Condition is met
1	---->	Any jet Failed MR fraction cut (CH/TOT > .4)
2	---->	Any jet Failed Max Cell cut (EMAX2/EMAX < .10)
3	---->	Any jet Failed Level 1 tower energy/Calorimeter energy (.4 < L1/L2 < 1.6) for all Calorimeter towers below L1 saturation (64 GeV)

For example,bad_word = 0 implies none of the conditions have been met. If bad_word = 5, conditions 2 and 3 have been met.

We stripped 104 Events from the STA's requiring that,

a. At least two jets were present

b. One of the jets had ET > 90 GeV

We visually scanned each event and checked whether the assigned BAD WORD was correct.Using the PIXIE display package as a tool for scanning, we visually scanned each event using End-view of Calorimeter, Level 1 trigger lego, Jets lego plot, which corresponds to the level 2, EM layer lego and FH layer lego. The developement of the jets,both in the transverse and longitudinal direction,was confirmed from the Side View of Calorimeter which also showed the Main Ring activity in CH and

the possible Hot cells. If our visual evaluation agreed with the "bad_word" the event was said to be TRUE otherwise FALSE. The results of the scan are summarized below.

BADWORD VALUE	# EVENTS	TRUE	FALSE
0	90	89*	1**
1	1	1	0
2	1	1	0
4	4	4^	0
6	8	8	0

*: Six of these events had towers not tested for L1/L2 because of the L1 saturation

**: The one false event had large missing Et directly opposite the jet , a hot cell with some activity in neighboring cells fooled the cuts. (FIG.1)

^: Interestingly one event, which failed the L1/L2 cut appears to be a MR - Beam - Gas interaction. Since the event pentrated the FH,the CH cut was passed. (FIG.2)

Conclusions:
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1. Although the statistics is low this very preliminary study of high Et jets shows that the BAD_WORD cuts have reasonable efficiency , 89/89 for good events and reasonable rejection 14/15 for bad events.

2. The single event which passed the cuts but was clearly bad would fail a modest missing Et cut.

3. We plan on scanning more high Et jets to get a better measure of the efficiency.

B. DIJET EVENTS WITH ET GREATER THAN 200 GeV

Similar to the above case, the dijet evnents with Et > 200 GeV were scanned. A sample of 108 such events were stripped

from the ALL stream STAs with a similar selection criteria like,

a. At least two jets were present in the event

b. One of the jets had Et > 200 GeV

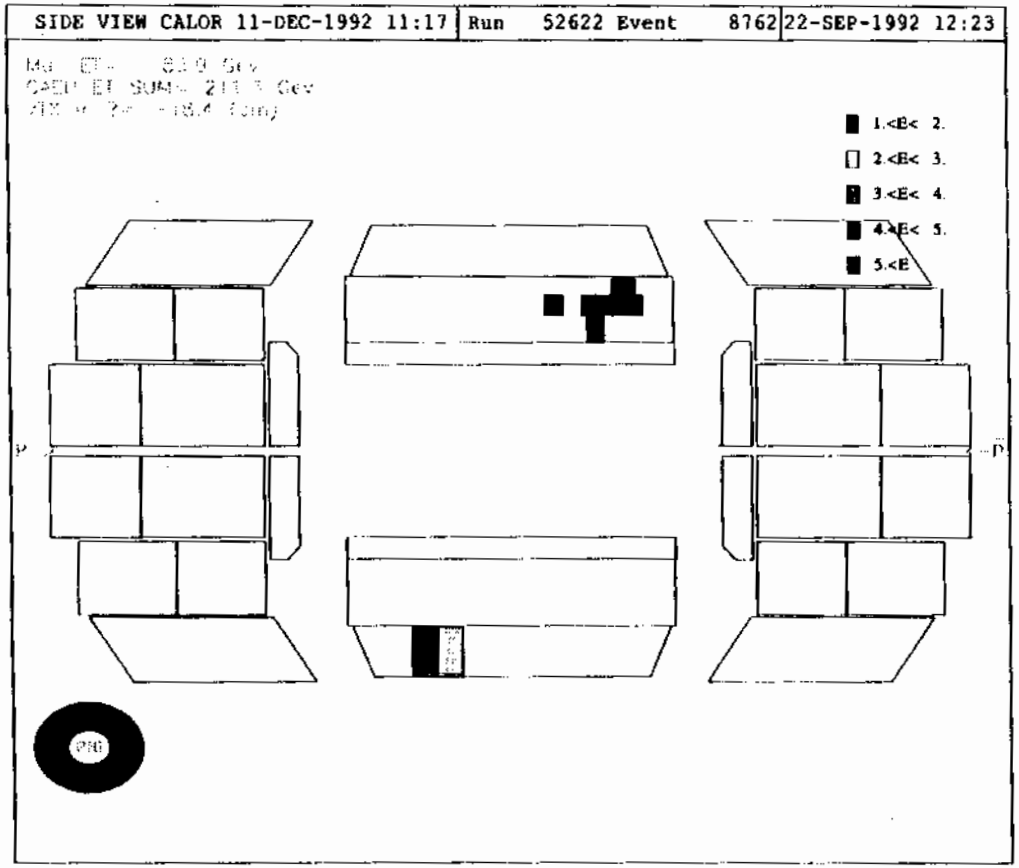
For this sample of 108 events, the result follows:

# evts	# evts.TRUE	# evts.FALSE
108	107	1

Conclusions:

1. The one event which is false, has a failed L1/L2 cut but visual scanning shows it should have passed that cut.

2. Out of these 108 dijet events only 6 were found to be good events ! Rest of them either have a or more Hot cell/cells (i.e., neighboring cells are also hot) or have main ring encroaching into the CH,FH layers.


SIDE VIEW CALOR 11-DEC-1992 11:17
Run 52622 Event 8762
22-SEP-1992 12:23
1.<E< 2.
2.<E< 3.
3.<E< 4.
4.<E< 5.
5.<E
P
-P
END

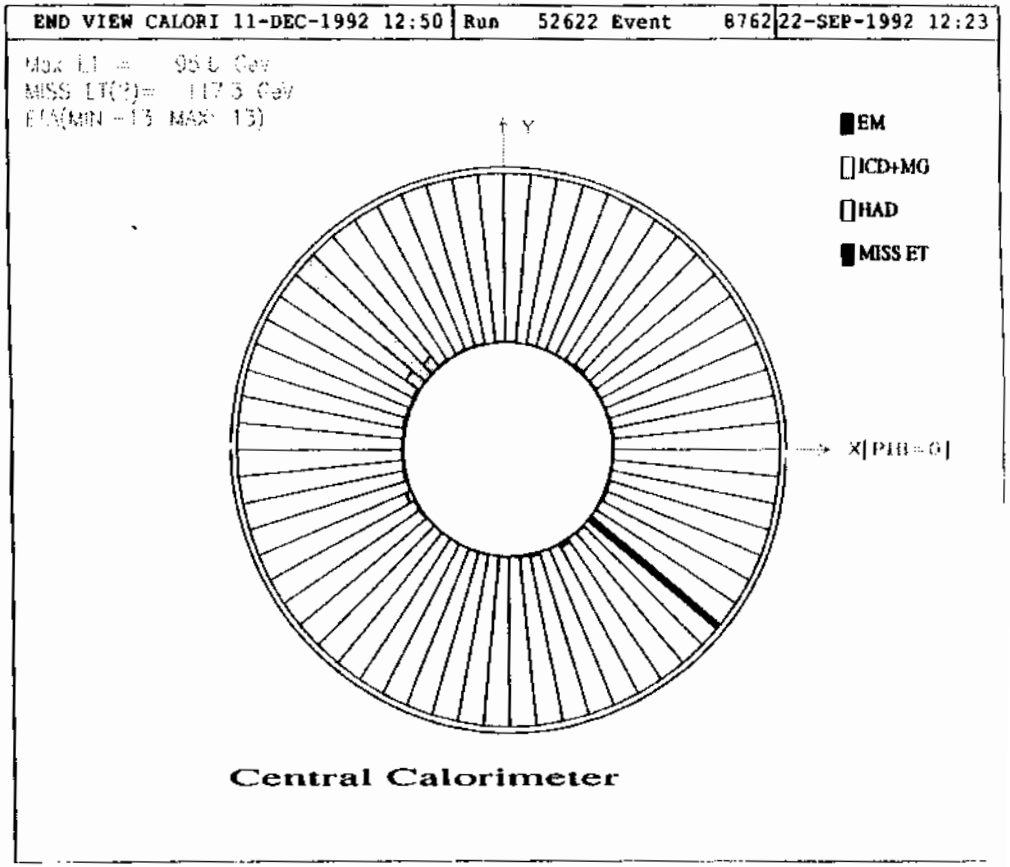

END VIEW CALORI 11-DEC-1992 12:50
Run 52622 Event 8762
22-SEP-1992 12:23
Y
X(PHI=0)
EM
ICD+MG
HAD
MISS ET
Central Calorimeter

FIG. 1

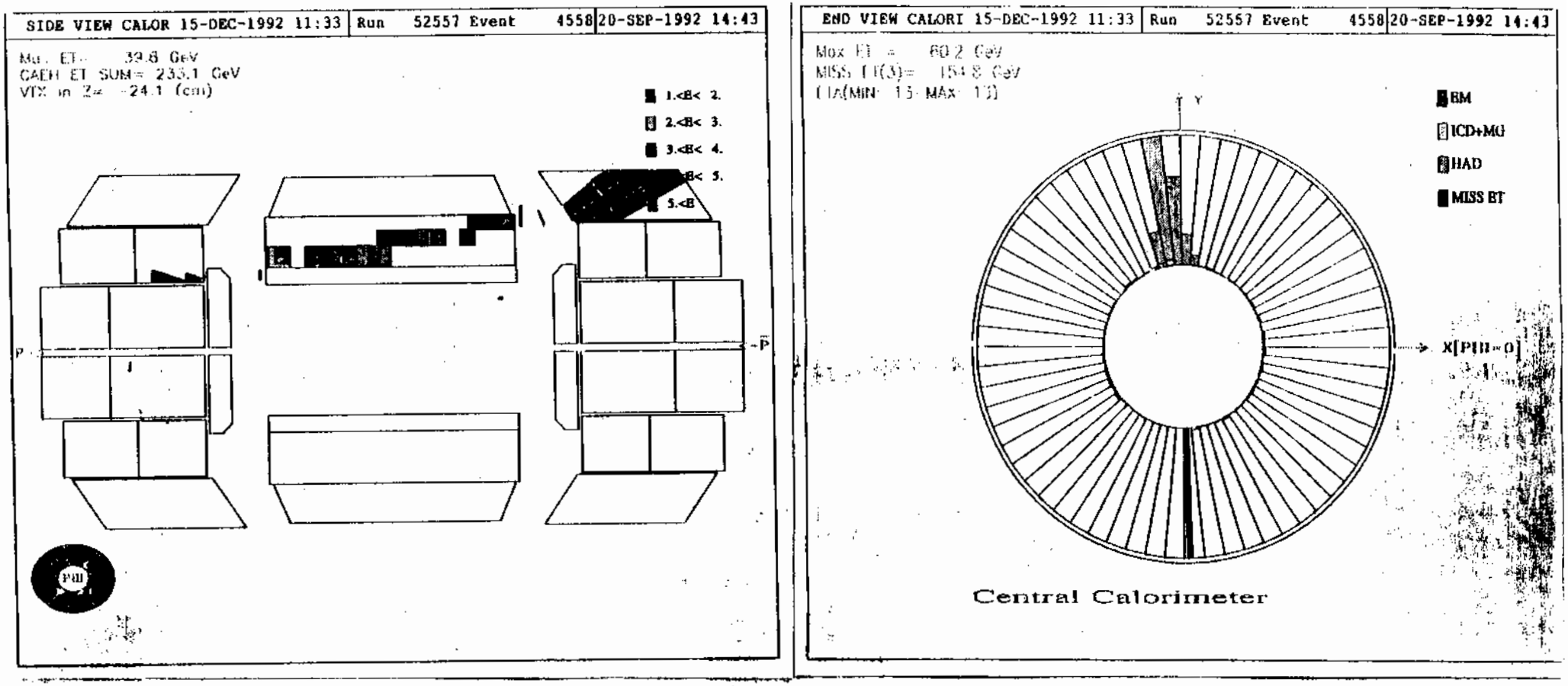

SIDE VIEW CALOR 15-DEC-1992 11:33
Run 52557 Event 4558 20-SEP-1992 14:43
CAEH ET SUM= 235.1 GeV
1.<E< 2.
2.<E< 3.
3.<E< 4.
5.<E
P
P
END VIEW CALORI 15-DEC-1992 11:33
Run 52557 Event 4558 20-SEP-1992 14:43
EM
ICD+MG
HAD
MISS ET
Y
X[PHI=0]
Central Calorimeter

FIG. 2