JADE Computer Note 14

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# Lead Glass Cluster Bank Structure

The lead glass cluster analysis is made in two steps. The first is done by calling LGANAL which finds clusters and calculates their energies and absolute positions. After the step the order of the ADC data is changed so that those blocks which form a cluster are also grouped in the data array. The shuffled ADC data is copied into a new bank (ALGN). The cluster information is also written in a new bank (LGCL) together with an ADC map, which consists of pointers to the ADC data in the bank ALGN for each cluster. The second step is done by calling LGCDIR which connects the lead glass clusters with the inner chamber tracks and calculates the emission angles of the clusters. The new variables are added to the bank LGCL.

## Pointers to the LG banks in the fixed header

| | |
|---|---|
| Raw data (ALGL) | IHEADR(60) |
| shuffled data (CALGN) | IHEADR(75) |
| LG cluster data (LGCL) | IHEADR(72) |

## Structure of the LGCL Bank

(0) LNG: Length of the bank counting from IP1 Bos Length.

(1) IP1: pointer to the general information = 5

(2) IP2: pointer to the cluster map = 26

(3) IP3: pointer to the cluster information = (NCLST + 27)

(4) IP4: pointer to the (last word + 1)

/ General Information /

(5) Identifier of the program version no.

(6) Bank generation date and time

(7) NCLST: No. of clusters

(8) NCLSB: " in the barrel part

(9) NCLSZM: No. of clusters in the Z < 0 end cap

(10) NCLSZP: " in the Z > 0 end cap

(11) ETOT : total energy including charged track contribution

(12) ETOTB : " in the barrel part

(13) ETOTZM: " in the Z < 0 end cap

(14) ETOTZP: " in the Z > 0 end cap

(15)* NNEUT : No. of photons

(16)* EGTOT : total energy of photons

(17)* EGTOTB: " in the barrel part

(18)* EGTOTM: " in the Z < 0 E.C.

(18)* EGTOTP: " in the Z > 0 E.C.

(20) IER : The flag for any error in the course of cluster analysis. (=0 if no error)

(21) ISTEP : Stage of the analysis step
= 1 for step 1
= 2 if step 2 is finished

(22) ICORR : = 1 if detailed energy correction is done

(23)
not used kept for future use to put other flags.
(24)

(25) NWPCL : No. of words used per cluster for the cluster information ( = 15, at present)

## Cluster Information

### / Cluster Map /

(26) MAP(1): Start position of cluster 1 in the shuffled ADC data

(27) MAP(2):

.
.
.

(NCLST+25) MAP(NCLST): start position of the last cluster in the shuffled ADC data

(NCLST+26) MAP(NCLST+1): position of the last ADC data + 1

/ cluster information /

The cluster information for the n-th cluster can be fetched by means of the pointers IP3 and NWPCL.

IB = IP3 + (N-1) * NWPCL - 1

(IB + 1) JPART: LG detector part
0 for barrel, +/-1 for +/-Z E.C.

(IB + 2) ENERGY: cluster shower energy in GeV

(IB + 3) σ(ENERGY): expected error of the energy

(IB + 4) PHI
(IB + 5) Z
} for barrel cluster PHI in radian, X,Y,Z in mm.

X
Y
} for E.C. cluster

(IB + 6) σ(PHI)
(IB + 7) σ( Z )
} for barrel

σ(X)
σ(Y)
} for E.C.

(IB + 8)* NCH: no. of connected charged tracks
= 0 for γ's

(IB + 9)*
(IB + 10)*
(IB + 11)*
} dx, dy, dz: direction cosines measured from the event vertex

(IB + 12)*
(IB + 13)*
(IB + 14)*
} cluster elipse eigenvalues to show the cluster structure. (These are still under study by R. Eichler.)

(IB + 15) not yet used

The variables marked with a (*) are evaluated in the second step analysis.