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JADE COMPUTER NOTE 71

New dE/dx Calibration

Based on the z calibration P. Dittmann has started to develop a new calibration for the measurement of the energy loss dE/dx. His work has been continued and a final calibration is now available for the period 1979 - 1982.
The resulting overall rms resolution (compared with the old one) is:

	old	new
Bhabhas	9 %	6.5 %
Pions in multi-hadronic events 0.45 < p < 0.6 GeV	11 %	8.0 %

Here, only tracks with more than 36 hits and cos(theta) < 0.75 were taken into account.

For the data of 1983 a preliminary calibration is available.

The old program DEDXBN was replaced by a new one which performs:

a) Calculation of dE/dx and sigma(dE/dx)
b) Comparison with the theoretical value (J.A.J. Skard, K. Ambrus)

The program is on the general library F11LHO.JADEGL and is called by:

```
CALL   DEDXBN
```

The results are stored in the

```
COMMON /CWORK1/ IER,NTR,TRES(10,60).
```

IER	=	ERRORFLAG: IER=1000 IF BANK POINTER = 0 IER=4000 IF # OF TRACKS .LE. 0 OR .GT. 60
NTR	=	# OF TRACKS
ITRES(1,ITR)	=	NHIT
TRES(2,ITR)	=	DEDX
TRES(3,ITR)	=	SIGMA(DEDX)
TRES(4,ITR)	=	CHISQ(ELECTRON)
TRES(5,ITR)	=	CHISQ(PION)
TRES(6,ITR)	=	CHISQ(KAON)
TRES(7,ITR)	=	CHISQ(PROTON)
ITRES(8,ITR)	=	JMIN, NUMBER FOR MINIMUM CHISQUARE 1 = P, 2 = K, 3 = PI, 4 = E, 0=NO DEDX
TRES(9,ITR)	=	MOMENTUM (GEV)
TRES(10,ITR)	=	MOMENTUM ERROR

The program DEDXBN has to be used in the SUPERVISOR. In this way the dE/dx calibration constants are given automatically by KLREAD from the general calibration files

```
F11LHO.AUPDAT1
```

or

```
F11LHO.BUPDAT0
F11LHO.BUPDAT1
```

The results of DEDXBN can be saved by creating a BOS bank 'DEDX' via:

```
IPATR = IDATA( IBLN('PATR') )
CALL DEDXBK(IPATR)
```

(The bank number is the same as for the 'PATR' bank.)
The 'DEDX' bank contains:

```
(1)  :  IER
(2)  :  NTR

(3)  :  NHIT                  )
(4)  :  DEDX                  )
(5)  :  SIGMA(DEDX)           )
(6)  :  CHISQ(ELECTRON)       )
(7)  :  CHISQ(PION)           )    1. track
(8)  :  CHISQ(KAON)           )
(9)  :  CHISQ(PROTON)         )
(10) :  JMIN                  )
(11) :  MOMENTUM              )
(12) :  MOMENTUM ERROR        )

(13) :  NHIT                  )
(14) :  DEDX                  )
  .        .                  )    2. track
  .        .                  )
(22) :  MOMENTUM ERROR        )

        .
        .
        .
```

If the 'TP' step was performed with this new version of DEDXBN the results are also available from the 'TPTR' banks.

For the use of DEDXBN the data have to be z recalibrated. This is automatically controled by DEDXBN. If the 'z calibration flag' (second half word in the 'JETC' bank) is zero the program does:

```
CALL   ZSFIT(1)
```

Important:
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If the user wants in addition the so called 'hit cleaning' together with a z-s fit he has to CALL ZSFIT(0) before CALL DEDXBN. The hit cleaning removes hits if there is a nearby track within a distance of 3 mm. Without 'hit cleaning' the rms resolution for tracks in multihadronic events is 9.0 % instead of 8.0 % .

The new dE/dx version is also available in the graphics package.