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Changes to dE/dx-Routines and
Description of Bank JHTQ

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Introduction The dE/dx-programs require some information on the quality of hits to be used. This quality information, in most cases can be taken from the z-fit information, stored in bank JHTL. Whereas, in the past, the user was required to care for the z-calibration himself, the dE/dx routines have now been changed to call the z-calibration routine ZSFIT automatically.

However, as for the case of overflow hits, some hits have bad quality for z-fits and are still usable for dE/dx. Since all bits in bank JHTL are already in use (not always properly documented) an extra bank, called JHTQ had to be generated to provide the hit quality information for the dE/dx-programs.

The new version of the program ZSFIT(MODE) will generate bank JHTQ if the 8-Bit (Bit 28 in IBM notation) is set in the argument MODE. DEDXBN, the standard dE/dx-routine, calls ZSFIT with argument $9, (= 1 + 8)$, such that both the JETC-amplitudes are recalibrated - as in the past - and - as a new feature - the bank JHTQ is created. A new version of the dE/dx- program (available as member DEDXCN) calls ZSFIT with mode $11, (= 3 - 8)$ to perform the so called hit cleaning and provide consistent results in banks JHTQ and JHTL. This routine will become the standard after the summer conferences.

Note that with this scheme it is still left to the responsibility of the user to provide tracks with adequate z-fits. The results of the fit obtained by ZSFIT are not stored in bank PATR and only used internally to provide the hit quality information. The user should be reminded that a bad z-information neccessarily influences the result of the dE/dx-calculation. There are several programs available to perform z-fits (JCN 95).

Format of Bank JHTQ

```
COMMON / BCS / IW(10000)
DIMENSION HW(20000)
EQUIVALENCE (HW(1),IW(1))
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IW(...+1)	=	JHTQBT = Number of Bits per Hit (=2 presently) NHPW = (32/JHTQBT) hits per 32 Bit word
IW(...+1+1)	=	packed dE/dx flags for hits 1 to NHPW
IW(...+1+2)	=	packed dE/dx flags for hits NHPW+1 to 2*NHPW
IW(...+1+(NHits-1)/NHPW+1)	=	...

Position of dE/dx-flags for the different hits packed in a 32-bit word for JHTQBT=2

Hit 16																Hit 2	Hit 1
0 | 1																28 | 29	30 | 31

The bank has to be seen in conjunction with the bank JHTL, where the information for a hit j is mapped onto half words, addressed relative to the INTEGER*2 JHTL BOS Pointer:

$$HW(... + 2 + (j-1) * 2 + 1)$$

and

$$HW(... + 2 + (j-1) * 2 + 2)$$

The corresponding dE/dx-Bits can be found in bank JHTQ, addressed relative to the INTEGER*4 JHTQ BOS Pointer:

$$IW(... + 1 + (j-1)/NHPW + 1)$$

at bit position

$$31 - mod(j-1, NHPW) * JHTQBT$$

and

$$31 - (mod(j-1, NHPW) * JHTQBT + 1)$$

respectively. (IBM notation! Bit 31 denotes lowest order bit.)

The bank JHTQ is deleted after calculation of dE/dx-values in DEDXBN.