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fidamc & fidarc: version 5.20
                 release 27/07/2006

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release notes

     Introduction
     The new geometry for the 2006 data taking has been introduced
     and the coexistence with previous data taking geometry
     guaranteed. These release notes are divided in two parts. The
     "geometry" modifications are described in the first part, all
     the others in the second part.

     PART I - Geometry modifications
1    CODE MODIFICATIONS TO HOST 2003 AND 2006 GEOMETRY
1    ( - G. Bonomi, B. Dalena. A. Filippi, A. Zenoni - )
1    - Basic idea is:
1      introduce two new flags, one for the geometry (2003 detector
1      geometry or 2006 detector geometry) and one for the alignement
1      (design geometry or aligned geometry). We thus introduced the
1      following two flags:
1         GEO2006: 1 = 2006 geometry;    0 = 2003 geometry
1         GEOALI:  1 = aligned geometry, 0 = design geometry
1
1    FIDAMC: montecarlo
1    - (Modifications in FIDARC, UGFFGO, UVINIT, CKCARD and GENECDE)
1       The two new flags are set via fidamc.dat file. We introduced
1       a new CARD, called GEOC (GEOmetry Conditions) with the
1       following syntax:
1               C       GEO2006    GEOALI
1               GEOC      1          0
1       Possible values are 0 or 1 for both FLAGS. Different values
1       (or GEOC card not present in fidamc) will cause the program
1       to stop. The values are stored in the GEOCON common.
1
1    - (Modifications in UGEOM, UGEOIN, UGINTG and GUOUT)
1       The detector geometry is set accordingly in UGEOM and UGEOIN
1       with internal IFs. The UGINTG routine instead has been
1       duplicated (UGINTG and UGINTG03, called appropriately in
1       UGEOM). This routine takes care of the alignement of the
1       detectors.
1
1       The flag values (GEO2006 and GEOALI) are also stored inside
1       the fidageo file (through user words UBUF in the definition
1       of the AIR medium in UGEOM) and the MC data file
1       run00001_rdt.dat (through user words BUFF in the event header
1       BANK in GUOUT).
1
1    - (Modifications in UGINIT)
1       The GEO2006 flag controls also the geometry file output.
1       The name of the geometry file is set accordingly:
1
1         fidageo_2003.dat for the 2003 geometry
1         fidageo_2006.dat for the 2006 geometry
1
1    - (Modifications in UGINTG)
1       This routine has been duplicated. The "old" version, related
1       to the 2003 geometry, has been mantained under the name UGINTG03,
1       while the "new" version for the 2006 geometry is contained in the
1       UGINTG routine. Both routines have been modified to be driven by
1       the GEOALI flag (the GEO2006 flag is used to call either UGINTG03,
1       when GEO2006=0 either UGINTG when GEO2006=1). The old CMZ flags
1       ALIGN and ALIGNPLUS have been removed. In both routines the
1       GEOALI=0 flag cause the default GEANT geometry to be used, while
1       the GEOALI=1 flag force the program to use the aligned geometry
1       (for the 2006 geometry, the initial alignement values have been
1       set to the same of 2003).
1
1    - (Modifications in UGTRKV)
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1       The alignment of the chambers is managed in UGTRKV with internal
1       IFs. Also here the CMZ flags ALIGN and ALIGNPLUS have been
1       removed. The effect of the GEOALI flag is the same as in
1       UGINTG/UGINTG03.
1
1    - (Modifications in UGTRKV, UGINTG, UGBASK)
1       All references to the parameters "offset"-like have been removed
1       since no more used. The chambers rotation parameters viceversa
1       are still present.
1
1
1    FIDARC: reconstruction
1    - (Modifications in FIDARC, UGFFGO, UVINIT, CKCARD and GENECDE).
1       The two new flags are set via fidarc.dat file. We introduced
1       a new CARD, called GEOC (GEOmetry Conditions) with the
1       following syntax (as copied from fidarc.dat):
1       C       GEO2006    GEOALI
1       GEOC      1          0
1       Possible values are 0 or 1 for both FLAGS. Different values
1       (or GEOC card not present in fidamc) will cause the program
1       to stop. The values are stored in the GEOCON common.
1
1    - (Modifications in GENREC, BACKTRK, F_VERT, FILLHYPE
1       FILLGENHYP and GENECDE)
1       The backtracking system has been changed accordingly to
1       the new/old geometry in all the routines in which it was
1       required. This system, based on the volume hierarchy, has
1       been rationalized with the introduction of the sequence
1       TARNAM that stores the volumes names in DATA that can be
1       used appropriately.
1
1    - (Modifications in FIGEOM, REAGEO and RDTUPK)
1       The geometry input file is read accordingly to the
1       GEO2006 flag set in fidarc.dat file.
1         fidageo_2003.dat for the 2003 geometry
1         fidageo_2006.dat for the 2006 geometry
1
1       A consistency check between the flags set in fidarc.dat
1       and the values stored inside the fidageo_2003/2006.dat file
1       is performed inside the REAGEO routine. An inconsistency
1       between such values will cause the program to stop (e.g.
1       GEOALI set to 0 in fidarc.dat and 1 in fidageo_2003.dat).
1
1       Another consistency check is performed in RDTUPK.
1        o) For the Montecarlo, the flags set in fidarc.dat are
1          compared with the flags stored in the MC data file
1          (e.g. run00001_rdt.dat). An inconsistency between
1          such values will cause the program to stop.
1
1        o) For the real data the GEO2006 flag set in fidarc.dat
1          is compared with the run date. For example if the 2003
1          geometry is set in fidarc.dat and the run is related
1          to the new data taking the program stops (and viceversa
1          if the new geometry is set analyzing old data).

     PART II - All other modifications
2
2    FIDARC: reconstruction
2    Introduction ( - G. Bonomi - )
2       The read_lib routine has been duplicated and copied to the
2       read_lib03 routine. This routine (fin_open03, fin_event03,
2       fin_skip03, fin_close03) is used whenever the old (2003) data
2       are analyzed. When the new data are analyzed the read_lib
2       routine is used.
2    - Modifications to read_lib ( - B. Dalena, G. Simonetti - )
2       Connection to db:
2       o) If the unix start time of the run is > 1145138400
2          (April 16 2006 h00:00:00) it connects to the new TOFONE database
2          named TofDB2, otherwise to the old db TofDB (this part is
2          not changed). For new run the original call to the fee table of
2          TofDB is now replaced with the call to the fee table for TDCs/ADCs
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2          channel map and to the calib table for t0 and conversion constants.
2          The offset table is not changed and its call depends only on the
2          choice of proper TOF database name.
2       Zebra JFGES bank:
2       o) New ISLB,ESLB zebra bank created in order to contain the information of
2          the calibrated mean timer high threshold of TOFINO, see Q(ISLB+17).
2          The raw high threshold mean timer information is stored in the most 16
2          significant bits (17-32) of IQ(ISLB+6) position of the bank, while the
2          bits 1-16 of the same IQ(ISLB+6) contains the raw low threshold mean
2          timer and TOFONE meant timer (if ESLB).
2    - Modifications to GUTREV ( - B. Dalena - )
2       TOF informations:
2       o) In GUTREV the call to provatof has been introduced. This routine create
2          an n-tuple which contains TOFINO-TOFONE raw-calibrated data regardless
2          of run type.
2
2    - NEW BHABHA fitting procedure and KSHORT decay reconstruction
2       ( - F. De Mori - )
2       o) Bhabha fitting modified: now the ISIM hit is inserted in the
2       fitting(BHALONGTRK). The track fitting end is on a cilinder of 6.2 cm
2       radius(It was 7.8 cm)
2
2       o) The Bhabha backtracking was completely modified (BHABACKTRK).
2          The first step is the back-tracking to the TOFINO(new DECK FIITOF).
2          The second and last one is the extrapolation to the pipe (BERI
2          volume)(deck FIPIPE modified.Definition of the correct volumes'
2          herarchy)
2       o) change of the CALL to BHABACKTRK to have in output the number of
2          points stored in back-tracking for graphics purposes. That is
2          needed to store the following informations about the vertex finding
2          and the extrapolation to the vertex (when two tracks are found).
2       o) new sobroutine of vertex finding (new DECK EEVERT1): if one positive
2          and one negative track are found from the starting point
2          (extrapolation to the PIPE) step by step the subroutine GHELIX is
2          called and the minimum approch distance is searched for.
2          (There is a TOLERANCE defined VTXTOL as a maximum for this quantity.
2          That should be tuned by MC generation: to be done).
2          At this point the  average point between the two last points of the
2          extrapolation for each track is chose as last point and the vertex is
2          chose as the averege of the last point of electron-type track and
2          positron-type track.
2          The graphical informations about this extrapolation to the vertex are
2          stored in the bank LBACK.
2       o) All this changes were necessary beacuse the reconstruction of the
2          Kshort-decay events was completely wrong giving two peaks in the angular
2          distribution and in the invariant mass. These corrections eliminate the
2          problem.
2       o) according to all these modifications the subroutines of backtracking
2          graphical interface were changed (UZBTXY,UZBTZX,UZBTZY)
2
2       o) The philosophy of the reconstruction code was changed. It was decided to
2          put all the experimental constants (changing every data-taking) in a
2          proper sequence of DATA(DATA_TAK in RECCDE).
2          Here's the list of these "constants":
2
2          ERTOF(12) from Bhalookis and lookis: energy deposited slab thresholds
2          F_DEDX(18) factor by which the de/dx on I/OSIM is divided;
2          THR1_DEX(18) kaon particle identification threshold on de/dx of I/OSIM;
2          THR2_DEX(18) proton particle identification threshold on de/dx of I/OSIM
2                    (different values for MCARLO e -MCARLO selection)
2          STRANOMAL1(404),....,STRANOMAL6(404) LIST OF STRAW with anomalous TDC
2          LWTDC_DIFF,HITDC_DIFF,HITDC_SUM
2
2       o) accordingly the FILMS, LOOKIS, BHALOOKIS, STRDEC, STRDEKT0, TOFDEC
2          decks were changed including the sequence DATA_TAK lab (different
2          values for MCARLO e -MCARLO selection)
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