NA50

GEADRIV USER'S GUIDE

Version 2.00/02

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This document refers to the NA50 simulation program GEADRIV, version 3.00/02

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Contents

Chapter 1

INTRODUCTION

1.1 DIMU Exec

GEADRIV is easily sent to batch (or run interactively) with DIMU Exec (**DIMU GEA**). For more information about DIMU Exec, see NA50 FRIEND'S GUIDE.

1.2 ADDITIVE CAR FILES

GEADRIV CAR needs the call of another CAR file, named NA50UTIL, in which are defined some commons and quantities involved in the different NA50 programs (see NA50 FRIEND'S GUIDE).

GEADRIV CAR uses the GEANT code via the TXTLIB and the CAR file in order to get the GEANT deck GCDES. The version number for the TXTLIB and the car file must be the same (second panel of DIMU Exec).

1.3 TXTLIB'S

LIBNA50 TXTLIB is on the public disk, NA50SERV at FRCPN11 and PUBWF 196 at CERNVM (see NA50 FRIEND'S GUIDE).

It allows the reading and the decoding of the geometrical parameters, PARAMS NA50, and fills the corresponding commons (see NA50 FRIEND'S GUIDE).

GEADRIV uses also FRITIOF via FRITIOF TXTLIB, which includes JETSET version 7.3, PYTHIA version 5.5 and ARIADNE version 4.02.

In case where the Drell-Yan dimuon production is requested, the PDFLIB TXTLIB is also required.

Graphics are done using the GRAFLIB or GRAFLIB(X11 packages.

1.4 CRADLE

The miminum cradle to run GEADRIV is :

```
+PATCH,INSTAL,T=DATA.
+USE,NA50CDKS,NA50BLDA.
+USE,GCDES.
+USE,*system.
+USE,*NORMAL.
+EXE.
+PAM,11,T=C.
+PAM,12,T=C.
+PAM,13,T=C.
+QUIT.
```

where system can be IBM, VAX or UNIX.

Chapter 2

DESCRIPTION OF THE GEADRIV CAR FILE

2.1 Patchs and Decks

P = STORY	1	
P = INSTAL	2	
P = *IBM	3	
P = *NORMAL	4	
P = COMDECKS	5	
P = DESCRIBE	6	
	7	D = COMCOM
	8	D = ROUTIN
	9	D = COUNTS
P = GEADRIV	10	
	11	D = MAIN
	12	D = BLKDAT
	13	D = BODRIT
	14	D = CGPART
	15	D = COALES
	16	D = DRWASK
	17	D = DRWDIM
	18	D = DRWEVT
	19	D = DRWINI
	20	D = DRWVUE
	21	D = DSDMDY
	22	D = DSIGDY
	23	D = DSIGPT
	24	D = FRIGEA
	25	D = GENDIM
	26	D = GUFLD
	27	D = GUHADR
	28	D = GUKINE
	29	D = GUOUT
	30	D = GUPHAD
	31	D = GUSTEP
	32	D = GUTREV
	33	D = HITR
	34	D = PROJCT

	35	D = SAVKIN
	36	D = SETGEO
	37	D = TRAPDF
	38	D = TRIGGER
	39	D = UGEOM
	40	D = UGINIT
	41	D = UGLAST
	42	D = UHINIT
P = LASTCARD	43	

2.2 History

Start from GEADRIV PAM, version 1.00/03, last update 02/04/93
Define pilot patches *IBM, *VAX and *UNIX.
Uses comdecks and data defined in NA50UTIL CAR
Fortran to be created with a cradle including NA50UTIL,
and where the system (*IBM, *VAX or *UNIX) has to be defined
(cf Patch,INSTAL, below)
Change NAPART and NAPART(1) into NMPART in COALES (27/05/94)
Suppresses variables never used (27/05/94)
Modifies UGEOM for calo NRINGS (06/06/94)
Modifies CGPART for RO1 redefinition (16/06/94)
Includes dimuon generation (17/06/94)
Includes GPOS definition for GSKING (22/06/94)
Corrects magnet geometry for tracking in magnetic field
FIELDF, BMIN and BMAX in data cards (22/06/94)
Modifies the display routines to run onto UNIX (05/07/94)
Modifies ITRTYP to call GTHION instead of GTHADR (CGPART)
Includes the possibility of NTUPLE (05/07/94)
Modifies the media numbers above NUMAT (06/07/94)
modifies SETGEO for compatibility with LIBNA50 (23/02/95)
includes JOBID in common FLAGS (23/02/95)
Version 3.00/01 for NA50 (03/07/96)
Defines different logical unit for output when display
Allows histograms even when display is active
includes FLAG card to define hstore, ntuple...
Change some histogram parameters (see UHINIT)

Chapter 3

DESCRIPTION OF THE PROGRAM

PROGRAM MAIN

NA50 HADRON/LEPTON SIMULATION PROGRAM

This program makes an interface between the user and GEANT.
Ion collision is done using Fritiof, hadron collision using Gheisha.
The NA50 lay-out is designed according to the NA50 parameter file.
The program is steered by command cards (see subr. UGINIT)

BLOCK DATA BLKDAT

Initialises the constants and the variables

FUNCTION BODRIT (P)

External function called by HBFUN1 to generate Fermi motion in the projectile and/or target nucleus.

SUBROUTINE CGPART

Creates a directory of ions (called by UGINIT)

SUBROUTINE COALES

Builds a fragment with the spectator protons and neutrons (called by GUHADR).

FUNCTION DSIGDY (VAR2)

External function called by HBFUN1 to generate psi or psi prime y distribution.

FUNCTION DSIGPT (PT)

External function called by HBFUN1 to generate Pt distribution.

FUNCTION DSDMDY (VAR1,VAR2)

External function called by HBFUN2 to generate M-y (or rtau-xf or x1-x2) Drell-Yan distribution.

SUBROUTINE DRWASK

Asks for display specification (called by DRWEVT)

SUBROUTINE DRWDIM

Prints informations about dimuon onto display (called by DRWEVT).

SUBROUTINE DRWEVT (IGO)

Displays an event (called by MAIN, GUKINE and GUOUT).

SUBROUTINE DRWINI

Initialises the display routines (called by MAIN).

SUBROUTINE DRWVUE

Stores graphic informations about the displayed view (called by DRWEVT).

SUBROUTINE FRIGEA

Translates the Fritiof commons into Geant ones (called by GUHADR).

SUBROUTINE GENDIM (IPART,A,Z)

Generates a dimuon event : generates dimuon momentum in cm frame, generate the dimuon decay in the Collins-Sopper frame and compute the daughter momenta in the lab frame (called by GUHADR)

SUBROUTINE GUFLD (X,F)

Defines the magnetic field (called by GEANT/GUSWIM)

SUBROUTINE GUHADR

Generates the final state of one hadronic interaction (called by GEANT).

SUBROUTINE GUKINE

Defines kinematics for beam (called by GEANT at each event).

SUBROUTINE GUOUT

User routine called at the end of each event (by GEANT).

SUBROUTINE GUPHAD

Updates the step for hadronic interaction (called by GEANT).

SUBROUTINE GUSTEP

User routine called (by GEANT) at the end of each tracking step: mec is the mechanism origin of the step inwvol is different from 0 when the track has reached a volume boundary istop is different from 0 if the track has stopped.

SUBROUTINE GUTREV

User routine to control tracking of one event (called by GEANT/GRUN)

SUBROUTINE HITR (VECT,IFL)

Intersection of the track with the counter.
Computes hodoscope, sextant and scintillator number (called by GUSTEP).

SUBROUTINE PROJCT (VTEMP,Z)

Straight line propagation up to plane z (called by HITR).

SUBROUTINE SAVKIN

Calls GSKING after some selections (called by COALES, FRIGEA, GENDIM).

SUBROUTINE SETGEO

Routine to modify the geometrical specifications given by the parameter file and to define some additional quantities (called by UGINIT)

FUNCTION SPIN1 (TETA)

External function called by HBFUN1 to generate cos (teta*) distribution for Drell-Yan process.

SUBROUTINE TRIGGR (ITRIG)

Checks whether event satisfies trigger conditions (called by GUOUT).

SUBROUTINE UGEOM

Defines the geometry of the experiment for GEANT (called by UGINIT).

SUBROUTINE UGINIT

Initialises GEANT program and read data cards (called by MAIN).
The data cards are read using FFREAD, in a free format.
Some cards are needed in order to steer GEANT and some are used by GEADRIV itself.
The cards can appear in any order, except for the last one, which must be 'END'.
Only the first four letters of the keyword are checked.

CUTM - momentum cuts
- 1st parameter : momentum cut before NA10 absorber
- 2nd parameter : momentum cut inside NA10 absorber

DIMU - Dimuon generation
- 1st parameter : flag of dimuon generation requested if not zero : 1 = M,y, 2 = rtau,xf, 3 = x1,x2
- 2nd parameter : choice of D-Y (0), psi (1) or psi prime
- 3rd parameter : choice of PDFLIB set
- 4th parameter : minimum value of M (or rtau, or x1)
- 5th parameter : minimum value of y (or xf, or x2)
- 6th parameter : maximum value of M (or rtau, or x1)
- 7th parameter : maximum value of y (or xf, or x2)
- 8th parameter : minimum value of Pt
- 9th parameter : maximum value of Pt
- 10th parameter : minimum value of cos (teta*)
- 11th parameter : maximum value of cos (teta*)

DISP - Display information
- 1st parameter : flag of display requested if not zero
- 2nd parameter : number of events to display (if batch)
- 3rd parameter : 1 = no track, 2 = with tracks
- 4th parameter : view number (if batch)
- 5th parameter : volume number (if batch)
- 6th parameter : terminal type
- 7th parameter : workstation type
- 8th parameter : ask for position redefinition (if inter)
- 9th parameter : flag to run interactively on Unix

SETU - geometrical information
- 1st parameter : set-up number
- 2nd parameter : magnetic field factor

SUBT - pattern of used subtargets
- ith parameter : ith bit of subtarget pattern

TIRA - choice of location of primary interaction

1st parameter :	flag of vertex location 1 = anywhere, 2 = in plug, 3 = on target
2nd parameter :	plug type (0 if no hole)
3rd parameter :	fixed z-position of primary interaction
4th parameter :	minimum impact parameter
5th parameter :	maximum impact parameter

SWIT - GEANT common used for print-out purpose in GEADRIV

1st parameter :	print-out of vertex (ISWIT(1))
2nd parameter :	free
3rd parameter :	free
4th parameter :	print-out in GUKINE (ISWIT(4))
5th parameter :	print-out in GUSTEP (ISWIT(5))
6th parameter :	print-out in GUHADR (ISWIT(6))
7th parameter :	print-out in COALES (ISWIT(7))
8th parameter :	print-out in UGEOM (ISWIT(8))
9th parameter :	print-out in FRIGEA (ISWIT(9))

SUBROUTINE UGLAST

Terminates the job, prints histograms and statistics (called by GEANT)

SUBROUTINE UHINIT

Initialises the booking of the user's histograms (called by UGINIT).

Chapter 4

DESCRIPTION OF ALL VARIABLES

SUBROUTINE COMCOM

INFORMATION FOR COALESCENCE INTO FRAGMENT

```
PARAMETER (IFRAG0 = 50)
COMMON /COALCO/ NGKTOT,NFRAG,NPROSP,NNEUSP
```

IFRAG0	pointer to the beginning of ion description
NGKTOT	total number of produced particles
NFRAG	number of created fragments (1 or 2)
NPROSP	number of spectator protons
NNEUSP	number of spectator neutrons

COUNTERS

```
PARAMETER (MCOUNT=100)
COMMON /KCOUNT/ NCOUNT(MCOUNT)
```

MCOUNT	total number of counters
NCOUNT	counter (see description in patch DESCRIBE)

DIMUON GENERATION

```
 COMMON /DIMPAR/ KGENER,IFLGEN,IFLPSI,IFLSTR,VALMIN(2),VALMAX(2)
1  ,PTMIN,PTMAX,TSTMIN,TSTMAX,FLGEN(2,3),FERMI,STOPEV
 CHARACTER*2 FLGEN
 LOGICAL FERMI,STOPEV
 COMMON /DIMGEN/ DIMMAS,RTAU,RAPID,PTDIM,XDIM,PHICM,COSTCM
1  ,PBEAMD(5),PTGT(5),ETOTAL,PDIMLB(5),PDIMCM(4),PHIM(2),TETAM(2)
2  ,PCS(4,2),PDIM(4,2),ETOMIN,ETOMAX,NMUONS(4),INSEC,LEVELS
3  ,ZLAST(2)
 LOGICAL INSEC
```

KGENER	interaction number where dimuon is produced
IFLGEN	generation type (M-y or rtau-xf or x1-x2)
IFLPSI	generation of D-Y (0), psi (1) or psi prime (2)
IFLSTR	set of PDFLIB structure function for D-Y
VALMIN	minimum value to generate (see IFLGEN)

VALMAX	maximum value to generate (see IFLGEN)
PTMIN	minimum Pt to generate
PTMAX	maximum Pt to generate
TSTMIN	minimum cos (teta*) to generate
TSTMAX	maximum cos (teta*) to generate
FLGEN	Alphanumeric generation type (IFLGEN)
FERMI	flag of Fermi motion requested
STOPEV	flag to stop event if not accepted (display)
ETOTAL	c.m. energy of the collision
DIMMAS	dimuon mass
RTAU	dimuon M / ETOTAL
RAPID	dimuon pseudo-rapidity
XDIM	dimuon Feymann x
PTDIM	dimuon transverse momentum
PHICM	c.m. dimuon phi
COSTCM	c.m. dimuon cos (teta*)
PBEAMD	lab beam momentum (Px, Py, Pz, P, E)
PTGT	lab target momentum (Px, Py, Pz, P, E)
PDIMLB	lab dimuon momentum (Px, Py, Pz, P, E)
PDIMCM	c.m. dimuon momentum (Px, Py, Pz, P, E)
PDIM	lab momentum of each muon
ETOMIN	minimum c.m. energy of the collision
ETOMAX	maximum c.m. energy of the collision
NMUONS	number of muons at different z
INSEC	flag of at least one muon in magnet iron
LEVELS	index of reason for stopping a muon
ZLAST	last z position of muon i

VARIABLES FOR DISPLAY

```
      COMMON /DRAWNG/ DISPFL,DSPTRK,ITYPE,KWTYPE,NUMVUE,POSIT(4,5)
     1  ,COUXYZ(2,5),IDRVOL,NDISPL,ASKPOS,ITRKFL,HISDIS
      LOGICAL DISPFL,DSPTRK,ASKPOS,HISDIS
```

DISPFL	flag of requested display
ITRKFL	integer of requested display of tracks
DSPTRK	flag of requested display of tracks
ITYPE	Workstation type for terminal
KWTYPE	Workstation type for metafile
NUMVUE	requested view number
POSIT	position and scale for view
COUXYZ	abscissa of the cut view
NDISPL	number of events to display (if batch)
ASKPOS	flag for position and scale redefinition
HISDIS	request histograms during display

LOGICAL FLAGS

```
      COMMON /FLAGS/ EXITFL,INTER,STOPAR,ACCEPT(2),JOBID,ISTORE
```

```
      LOGICAL EXITFL,INTER,STOPAR,ACCEPT
      CHARACTER*12 JOBID
      PARAMETER (MTAGS = 10)
      COMMON /NTUPEL/ NTUPLE,IDNT,TUP(MTAGS),CHTAGS(MTAGS)
      CHARACTER*10 CHTAGS
      LOGICAL NTUPLE
```

EXITFL	flag of termination of the job
ACCEPT(1)	flag of event processed until normal end
ACCEPT(2)	flag of accepted trigger
INTER	flag of interactive running
STOPAR	flag of termination of the job
ISTORE	flag of requested histogram storage
NTUPLE	flag of requested ntuple
MTAGS	number of variables in ntuple
CHTAGS	name of variables in ntuple
IDNT	ntuple number
TUP	ntuple variables
JOBID	job name

INTERFACE WITH FRITIOF

```
      PARAMETER (KSZJ = 20000, KSZ1 = 20, KSZ2 = 300)
      COMMON /FRCODES/ IPT(2),PACD(27),NNUC(27),NPROT(27),KCD(27)
     1  ,RO1(27,2),EXMA(9,2)
      COMMON /FRINTN0/ PLI0(2,4),AOP(KSZ1),IOP(KSZ1),LFR(KSZ1)
      COMMON /FRPARA1/ KFR(KSZ1),VFR(KSZ1)
      COMMON /LUDAT1/ MSTU(200),PARU(200),MSTJ(200),PARJ(200)
      COMMON /LUDAT3/ MDCY(500,3),MDME(2000,2),BRAT(2000),KFDP(2000,5)
      COMMON /LUJETS/ N,K(KSZJ,5),P(KSZJ,5),V(KSZJ,5)
      SAVE /LUJETS/,/LUDAT1/
      CHARACTER*4 PACD
```

IPT	pointer to the projectile and target
PACD	variable description of each hadron
NNUC	number of nucleons in each nucleus
NPROT	number of protons in each nucleus
KCD	?
RO1	radius and Wood-Saxon constant of each nucleus
EXMA	excitation
KFR	flag to steer the execution of Fritiof routines
VFR	variables to steer the Fritiof routines
MSTU(11)	logical unit for Fritiof output
N	number of particles produced
K	history and identifier of each produced particle
P	Px, Py, Pz, E, M of each produced particle
V	other informations for each produced particle

COMMON FROM GEANT (KINEMATICS)

```
      COMMON/GCKINE/IKINE,PKINE(10),ITRA,ISTAK,IVERT,IPART,ITRTYP
     +      ,NAPART(5),AMASS,CHARGE,TLIFE,VERT(3),PVERT(4),IPAOLD
```

IKINE	beam identifier
PKINE	1) beam momentum (GeV/nucl, then GeV)
	2) beam theta angle

COMMON FROM GEANT (STEERING FLAGS)

```
      COMMON/GCFLAG/IDEBUG,IDEMIN,IDEMAX,ITEST,IDRUN,IDEVT,IEORUN
```

+ ,IEOTRI,IEVENT,ISWIT(10),IFINIT(20),NEVENT,NRNDM(2)

COMMON/GCFLAX/ BATCH, NOLOG LOGICAL BATCH, NOLOG

ISWIT	1) print-out of vertex
	2) free
	3) free
	4) print-out in GUKINE
	5) print-out in GUSTEP
	6) print-out in GUHADR
	7) print-out in COALES
	8) print-out in UGEOM
	9) print-out in FRIGEA

LOGICAL UNITS

```
      COMMON /LFILES/ LFTERM,LFIN,LFOUT,LFTIN,LFTOUT,LFTIM
     1  ,LFPAR,LFMETA,LFERR,LFHIS
```

LFTERM	logical unit for display terminal
LFIN	logical unit for input (command cards)
LFOUT	logical unit for output
LFTIM	logical unit for execution time
LFTIN	logical unit for input tape (not used)
LFTOUT	logical unit for output tape (not used)
LFPAR	logical unit for parameter file
LFMETA	logical unit for metafile
LFERR	logical unit for error (not used)
LFHIS	logical unit for histogram

VARIABLES FOR MULTIPLICITY PLOTS

```
      COMMON /MULTIP/ AMULT(5,5)
```

AMULT	multiplicities at different places of the setup

GEANT STEERING

```
      COMMON /SLECT/ QBEAM(3),IDBEAM,PBEAM,IDTARG,NSETUP,FIELDF
     1  ,ITIR(2),TIR,BMIN,BMAX,MATCIB,CUTMOM(2)
      COMMON /SUBTAR/ NTGTAT,ISUBTG(32),ALCIBL,NOCIBI,VERTEX(3)
```

QBEAM	beam Px, Py, Pz
IDBEAM	beam Geant identifier
PBEAM	beam momentum
IDTARG	target identifier
NSETUP	set-up number
TIR	choice of primary z-vertex
ITIR(1)	selection for vertex generation
	1 = anywhere, 3 = on target, 2 = on plug
ITIR(2)	plug type (0 if no hole)
MATCIB	target material index
CUTMOM	momentum cuts
BMIN	minimum impact parameter for primary collision
BMAX	maximum impact parameter for primary collision
FIELDF	magnetic field constant (def = 0.7)
NTGTAT	actual number of subtargets
ISUBTG	actual position of subtargets
ALCIBL	total interaction length of the target
NOCIBI	subtarget number of the primary interaction
VERTEX	coordinates of primary vertex

VERSION NUMBER AND DATE

```
      COMMON /VERSIO/ NVERS,NVERSA,DATVER
      CHARACTER*8 NVERSA
```

NVERS	version number
NVERSA	alphanumeric date of creation of the version
DATVER	date of creation of the version

Chapter 5

DESCRIPTION OF THE PROGRAM COUNTERS

1	number of processed events	GUKINE
2	number of primary collisions	GUHADR
3	number of hadronic collisions of second level	GUHADR
4	number of hadronic collisions of third level	GUHADR
5	number of hadronic collisions of fourth level	GUHADR
6	number of hadronic collisions of fifth level or more	GUHADR
7	number of events with normal end	GUOUT
17	number of events accepted by trigger	TRIGGR
50	number of entries in GENDIM	GENDIM
51	number of dimuon generations	GENDIM
52	number of events with forward dimuon	GENDIM
53	number of events with backward dimuon	GENDIM
54	number of events in acceptance at first glance	GENDIM
55	number of events with 2 muons at ENDABS	GUOUT
56	number of events with 2 muons at R2	GUOUT
57	number of events with 2 muons at	GUOUT
58	number of events with 2 muons at R4	GUOUT
59	number of events rejected in R1	GUSTEP
60	number of events rejected in R2	GUSTEP
61	number of events rejected in R3	GUSTEP
62	number of events rejected in R4	GUSTEP
63	number of events with muon below energy cut	GUSTEP
64	number of dimuons with at least one muon in iron	GUOUT
65	number of dimuons with two muons in R4	TRIGGR
66	number of trigger accepted dimuons	GUOUT
67	number of trigger accepted dimuons in air	GUOUT
68	number of evts with more than 2 muons at R1	GUOUT

Chapter 6

ALPHABETICAL INDEX OF VARIABLES

Variable	type	common	comdeck
ACCEPT	LOGICAL	FLAGS	FLAGS
ALCIBL	REAL	SUBTAR	SELECT
AMULT	REAL	MULTIP	MULTIPS
AOP	REAL	FRINTN0	FRICOM
ASKPOS	LOGICAL	DRAWNG	DRAWING
BMAX	REAL	SLECT	SELECT
BMIN	REAL	SLECT	SELECT
BRAT	REAL	LUDAT3	FRICOM
CHTAGS	CHARACTER	NTUPEL	FLAGS
COSTCM	REAL	DIMGEN	DIMUONS
COUXYZ	REAL	DRAWNG	DRAWING
CUTMOM	REAL	SLECT	SELECT
DATVER	REAL	VERSIO	VERSION
DIMMAS	REAL	DIMGEN	DIMUONS
DISPFL	LOGICAL	DRAWNG	DRAWING
DSPTRK	LOGICAL	DRAWNG	DRAWING
ETOMAX	REAL	DIMGEN	DIMUONS
ETOMIN	REAL	DIMGEN	DIMUONS
ETOTAL	REAL	DIMGEN	DIMUONS
EXITFL	LOGICAL	FLAGS	FLAGS
EXMA	REAL	FRCODES	FRICOM
FERMI	LOGICAL	DIMPAR	DIMUONS
FIELDF	REAL	SLECT	SELECT
FLGEN	CHARACTER	DIMPAR	DIMUONS
HISDIS	LOGICAL	DRAWNG	DRAWING
IDBEAM	INTEGER	SLECT	SELECT
IDNT	INTEGER	NTUPEL	FLAGS
IDRVOL	INTEGER	DRAWNG	DRAWING
IDTARG	INTEGER	SLECT	SELECT
IFLGEN	INTEGER	DIMPAR	DIMUONS
IFLPSI	INTEGER	DIMPAR	DIMUONS
IFLSTR	INTEGER	DIMPAR	DIMUONS
INSEC	LOGICAL	DIMGEN	DIMUONS
INTER	LOGICAL	FLAGS	FLAGS
IOP	INTEGER	FRINTN0	FRICOM

IPT	INTEGER	FRCODES	FRICOM
ISTORE	INTEGER	FLAGS	FLAGS
ISUBTG	INTEGER	SUBTAR	SELECT
ITIR	INTEGER	SLECT	SELECT
ITRKFL	INTEGER	DRAWNG	DRAWING
ITYPE	INTEGER	DRAWNG	DRAWING
JOBID	CHARACTER	FLAGS	FLAGS
K	INTEGER	LUJETS	FRICOM
KCD	INTEGER	FRCODES	FRICOM
KFDP	INTEGER	LUDAT3	FRICOM
KFR	INTEGER	FRPARA1	FRICOM
KGENER	INTEGER	DIMPAR	DIMUONS
KWTYPE	INTEGER	DRAWNG	DRAWING
LEVELS	INTEGER	DIMGEN	DIMUONS
LFERR	INTEGER	LFILES	LFILES
LFHIS	INTEGER	LFILES	LFILES
LFIN	INTEGER	LFILES	LFILES
LFMETA	INTEGER	LFILES	LFILES
LFOUT	INTEGER	LFILES	LFILES
LFPAR	INTEGER	LFILES	LFILES
LFR	INTEGER	FRINTN0	FRICOM
LFTERM	INTEGER	LFILES	LFILES
LFTIM	INTEGER	LFILES	LFILES
LFTIN	INTEGER	LFILES	LFILES
LFTOUT	INTEGER	LFILES	LFILES
MATCIB	INTEGER	SLECT	SELECT
MATINT	INTEGER	ADDMAT	GEOADD
MDCY	INTEGER	LUDAT3	FRICOM
MDME	INTEGER	LUDAT3	FRICOM
MSTJ	INTEGER	LUDAT1	FRICOM
MSTU	INTEGER	LUDAT1	FRICOM
N	INTEGER	LUJETS	FRICOM
NCOUNT	INTEGER	KCOUNT	COUNTS
NDISPL	INTEGER	DRAWNG	DRAWING
NFRAG	INTEGER	COALCO	COALCO
NGKTOT	INTEGER	COALCO	COALCO
NMUONS	INTEGER	DIMGEN	DIMUONS
NNEUSP	INTEGER	COALCO	COALCO
NNUC	INTEGER	FRCODES	FRICOM
NOCIBI	INTEGER	SUBTAR	SELECT
NPROSP	INTEGER	COALCO	COALCO
NPROT	INTEGER	FRCODES	FRICOM
NSETUP	INTEGER	SLECT	SELECT
NTGTAT	INTEGER	SUBTAR	SELECT
NTUPLE	LOGICAL	NTUPEL	FLAGS
NUMVUE	INTEGER	DRAWNG	DRAWING
NVERS	INTEGER	VERSIO	VERSION
NVERSA	CHARACTER	VERSIO	VERSION

P	REAL	LUJETS	FRICOM
PACD	REAL	FRCODES	FRICOM
PARJ	REAL	LUDAT1	FRICOM
PARU	REAL	LUDAT1	FRICOM
PBEAM	REAL	SLECT	SELECT
PBEAMD	REAL	DIMGEN	DIMUONS
PCS	REAL	DIMGEN	DIMUONS
PDIM	REAL	DIMGEN	DIMUONS
PDIMCM	REAL	DIMGEN	DIMUONS
PDIMLB	REAL	DIMGEN	DIMUONS
PHICM	REAL	DIMGEN	DIMUONS
PHIM	REAL	DIMGEN	DIMUONS
PINT	REAL	ADDMAT	GEOADD
PLI0	REAL	FRINTN0	FRICOM
POSIT	REAL	DRAWNG	DRAWING
PTDIM	REAL	DIMGEN	DIMUONS
PTGT	REAL	DIMGEN	DIMUONS
PTMAX	REAL	DIMPAR	DIMUONS
PTMIN	REAL	DIMPAR	DIMUONS
QBEAM	REAL	SLECT	SELECT
QPINT	REAL	ADDMAT	GEOADD
RAPID	REAL	DIMGEN	DIMUONS
RO1	REAL	FRCODES	FRICOM
RTAU	REAL	DIMGEN	DIMUONS
STOPAR	LOGICAL	FLAGS	FLAGS
STOPEV	LOGICAL	DIMPAR	DIMUONS
TETAM	REAL	DIMGEN	DIMUONS
TIR	REAL	SLECT	SELECT
TSTMAX	REAL	DIMPAR	DIMUONS
TSTMIN	REAL	DIMPAR	DIMUONS
TUP	REAL	NTUPEL	FLAGS
V	REAL	LUJETS	FRICOM
VALMAX	REAL	DIMPAR	DIMUONS
VALMIN	REAL	DIMPAR	DIMUONS
VERTEX	REAL	SUBTAR	SELECT
VFR	REAL	FRPARA1	FRICOM
XDIM	REAL	DIMGEN	DIMUONS
ZLAST	REAL	DIMGEN	DIMUONS
Z0INT	REAL	ADDMAT	GEOADD

Chapter 7

ORGANIGRAMME

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MAIN
———> GZEBRA
———> UGINIT
        ———>        GINIT
        ———>        GFFGO
        ———>        GZINIT
        ———>        GPART
        ———>        CGPART
                    ———>        GSPART
        ———>        GFPART
        ———>        MINUSC
        ———>        GEOMET
        ———>        SETGEO
                    ———>        GFPART
        ———>        UGEOM
                    ———>        GSMATE
                    ———>        GSTMED
                    ———>        GPTMED
                    ———>        GPMATE
                    ———>        GSVOLU
                    ———>        GSPOS
                    ———>        GSROTM
                    ———>        GSORD
                    ———>        GPVOLU
                    ———>        GGCLOS
                    ———>        GPSETS
        ———>        GPHYSI
        ———>        UHINIT
———> DRWEVT
        ———>        DRWASK
                    ———>        YESNO
                    ———>        ILECT
                    ———>        RLECT
                    ———>        GFPART
        ———>        GDOPEN
        ———>        DRWVUE
                    ———>        GFPART
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                  ——–>        MINUSI
                  ——–>        GDHEAD
                  ——–>        GDRAWT
                  ——–>        GSATT
                  ——–>        GDOPT
                  ——–>        GDRAWC
                  ——–>        GDRAW
                  ——–>        GDSPEC
                  ——–>        GDTREE
      ——–>        DRWDIM
      ——–>        GDCLOS
      ——–>        GDSHOW
      ——–>        GDELET
——–> GRUN
——–> UGLAST
      ——–>        LEFT
      ——–>        GLAST
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