# MFIX-CDM

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# Module Documentation

## 4.1 DES_BC Module Reference

### Data Types

- type dmi

### Variables

- LOGICAL DES_MI
- LOGICAL DES_MO_X
- LOGICAL DES_MO_Y
- LOGICAL DES_MO_Z
- DOUBLE PRECISION DES_BC_X_w
- DOUBLE PRECISION DES_BC_X_e
- DOUBLE PRECISION DES_BC_Y_s
- DOUBLE PRECISION DES_BC_Y_n
- DOUBLE PRECISION DES_BC_Z_b
- DOUBLE PRECISION DES_BC_Z_t
- DOUBLE PRECISION DES_BC_VOLFLOW_s
- DOUBLE PRECISION DES_BC_MASSFLOW_s
- CHARACTER ∗16 DES_BC_TYPE
- DOUBLE PRECISION DES_BC_U_s
- DOUBLE PRECISION DES_BC_V_s
- DOUBLE PRECISION DES_BC_W_s
- DOUBLE PRECISION DES_BC_Uw_s
- DOUBLE PRECISION DES_BC_Vw_s
- DOUBLE PRECISION DES_BC_Ww_s
- INTEGER, dimension(:), allocatable DES_BC_MI_ID
- INTEGER, dimension(:), allocatable DES_BC_MO_ID
- CHARACTER ∗4, dimension(:), allocatable DES_MI_CLASS
- CHARACTER ∗3, dimension(:), allocatable DES_MO_CLASS
- CHARACTER ∗4, dimension(:), allocatable PARTICLE_PLCMNT
- INTEGER, dimension(:), allocatable PI_FACTOR
- INTEGER, dimension(:), allocatable PI_COUNT

- DOUBLE PRECISION, dimension(:), allocatable DES_MI_TIME
- INTEGER, dimension(:), allocatable MI_FACTOR
- DOUBLE PRECISION, dimension(:), allocatable MI_WINDOW
- TYPE(dmi), dimension(:), allocatable I_OF_MI
- TYPE(dmi), dimension(:), allocatable J_OF_MI
- TYPE(dmi), dimension(:), allocatable MI_ORDER
- INTEGER, dimension(:,:), allocatable GS_ARRAY

### 4.1.1 Variable Documentation

#### 4.1.1.1 DOUBLE PRECISION DES_BC::DES_BC_MASSFLOW_s

Definition at line 32 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST().

#### 4.1.1.2 INTEGER,dimension(:),allocatable DES_BC::DES_BC_MI_ID

Definition at line 48 of file des_bc_mod.f.

Referenced by DES_MASS_INLET(), DES_PLACE_NEW_PARTICLE(), and DES_TIME_MARCH().

#### 4.1.1.3 INTEGER,dimension(:),allocatable DES_BC::DES_BC_MO_ID

Definition at line 49 of file des_bc_mod.f.

#### 4.1.1.4 CHARACTER*16 DES_BC::DES_BC_TYPE

Definition at line 33 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST().

#### 4.1.1.5 DOUBLE PRECISION DES_BC::DES_BC_U_s

Definition at line 36 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_MASS_INLET().

#### 4.1.1.6 DOUBLE PRECISION DES_BC::DES_BC_Uw_s

Definition at line 42 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST().

#### 4.1.1.7 DOUBLE PRECISION DES_BC::DES_BC_V_s

Definition at line 37 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_MASS_INLET().

#### 4.1.1.8 DOUBLE PRECISION DES_BC::DES_BC_VOLFLOW_s

Definition at line 31 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST().

#### 4.1.1.9 DOUBLE PRECISION DES_BC::DES_BC_Vw_s

Definition at line 43 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST().

#### 4.1.1.10 DOUBLE PRECISION DES_BC::DES_BC_W_s

Definition at line 38 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_MASS_INLET().

#### 4.1.1.11 DOUBLE PRECISION DES_BC::DES_BC_Ww_s

Definition at line 44 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST().

#### 4.1.1.12 DOUBLE PRECISION DES_BC::DES_BC_X_e

Definition at line 24 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_PLACE_NEW_PARTICLE().

#### 4.1.1.13 DOUBLE PRECISION DES_BC::DES_BC_X_w

Definition at line 23 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_PLACE_NEW_PARTICLE().

#### 4.1.1.14 DOUBLE PRECISION DES_BC::DES_BC_Y_n

Definition at line 26 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_PLACE_NEW_PARTICLE().

#### 4.1.1.15 DOUBLE PRECISION DES_BC::DES_BC_Y_s

Definition at line 25 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_PLACE_NEW_PARTICLE().

#### 4.1.1.16 DOUBLE PRECISION DES_BC::DES_BC_Z_b

Definition at line 27 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_PLACE_NEW_PARTICLE().

#### 4.1.1.17 DOUBLE PRECISION DES_BC::DES_BC_Z_t

Definition at line 28 of file des_bc_mod.f.

Referenced by DES_INIT_NAMELIST(), and DES_PLACE_NEW_PARTICLE().

#### 4.1.1.18 LOGICAL DES_BC::DES_MI

Definition at line 19 of file des_bc_mod.f.

Referenced by DES_TIME_MARCH().

#### 4.1.1.19 CHARACTER∗4,dimension(:),allocatable DES_BC::DES_MI_CLASS

Definition at line 56 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.20 DOUBLE PRECISION,dimension(:),allocatable DES_BC::DES_MI_TIME

Definition at line 81 of file des_bc_mod.f.

Referenced by DES_TIME_MARCH().

#### 4.1.1.21 CHARACTER∗3,dimension(:),allocatable DES_BC::DES_MO_CLASS

Definition at line 61 of file des_bc_mod.f.

#### 4.1.1.22 LOGICAL DES_BC::DES_MO_X

Definition at line 20 of file des_bc_mod.f.

#### 4.1.1.23 LOGICAL DES_BC::DES_MO_Y

Definition at line 20 of file des_bc_mod.f.

#### 4.1.1.24 LOGICAL DES_BC::DES_MO_Z

Definition at line 20 of file des_bc_mod.f.

#### 4.1.1.25 INTEGER,dimension(:,:),allocatable DES_BC::GS_ARRAY

Definition at line 108 of file des_bc_mod.f.

Referenced by DES_MASS_INLET(), and DES_NEW_PARTICLE_TEST().

#### 4.1.1.26 TYPE(dmi),dimension(:),allocatable DES_BC::I_OF_MI

Definition at line 100 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.27 TYPE(dmi),dimension(:),allocatable DES_BC::J_OF_MI

Definition at line 101 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.28 INTEGER,dimension(:),allocatable DES_BC::MI_FACTOR

Definition at line 91 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.29 TYPE(dmi),dimension(:),allocatable DES_BC::MI_ORDER

Definition at line 104 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.30 DOUBLE PRECISION,dimension(:),allocatable DES_BC::MI_WINDOW

Definition at line 94 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.31 CHARACTER∗4,dimension(:),allocatable DES_BC::PARTICLE_PLCMNT

Definition at line 65 of file des_bc_mod.f.

Referenced by DES_PLACE_NEW_PARTICLE().

#### 4.1.1.32 INTEGER,dimension(:),allocatable DES_BC::PI_COUNT

Definition at line 76 of file des_bc_mod.f.

Referenced by DES_MASS_INLET().

#### 4.1.1.33 INTEGER,dimension(:),allocatable DES_BC::PI_FACTOR

Definition at line 71 of file des_bc_mod.f.

Referenced by DES_TIME_MARCH().

## 4.2 DISCRETELEMENT Module Reference

### Data Types

- type iap1

### Variables

- LOGICAL PRINT_DES_DATA
- DOUBLE PRECISION DES_SPX_DT
- DOUBLE PRECISION DES_RES_DT
- LOGICAL DEM_OUTPUT_DATA_TECPLOT
- LOGICAL DEBUG_DES
- INTEGER FOCUS_PARTICLE
- INTEGER IFI
- INTEGER, parameter DES_EXTRA_UNIT = 2000
- INTEGER, parameter DES_VOLFRAC_UNIT = 2001
- INTEGER PARTICLES
- DOUBLE PRECISION PARTICLES_FACTOR
- LOGICAL DISCRETE_ELEMENT
- LOGICAL DES_CONTINUUM_COUPLED
- INTEGER NFACTOR
- LOGICAL DES_INTERP_ON
- LOGICAL TSUJI_DRAG
- CHARACTER(64) DES_INTG_METHOD
- DOUBLE PRECISION KN
- DOUBLE PRECISION KN_W
- DOUBLE PRECISION KT
- DOUBLE PRECISION KT_W
- DOUBLE PRECISION KT_FAC
- DOUBLE PRECISION KT_W_FAC
- DOUBLE PRECISION ETA_DES_N
- DOUBLE PRECISION ETA_N_W
- DOUBLE PRECISION ETA_DES_T
- DOUBLE PRECISION ETA_T_W
- DOUBLE PRECISION DES_ETAT_FAC
- DOUBLE PRECISION DES_ETAT_W_FAC
- DOUBLE PRECISION, dimension(:,:), allocatable DES_ETAN
- DOUBLE PRECISION, dimension(:,:), allocatable DES_ETAT
- DOUBLE PRECISION, dimension(:), allocatable DES_ETAN_WALL
- DOUBLE PRECISION, dimension(:), allocatable DES_ETAT_WALL
- DOUBLE PRECISION MEW
- DOUBLE PRECISION MEW_W
- DOUBLE PRECISION DES_EN_INPUT
- DOUBLE PRECISION DES_ET_INPUT
- DOUBLE PRECISION DES_EN_WALL_INPUT
- DOUBLE PRECISION DES_ET_WALL_INPUT
- DOUBLE PRECISION, dimension(:,:), allocatable REAL_EN
- DOUBLE PRECISION, dimension(:,:), allocatable REAL_ET
- DOUBLE PRECISION, dimension(:), allocatable REAL_EN_WALL

- DOUBLE PRECISION, dimension(:), allocatable REAL_ET_WALL
- CHARACTER(64) DES_COLL_MODEL
- double precision ew_young
- double precision vw_poisson
- double precision, dimension(dim_m) e_young
- double precision, dimension(dim_m) v_poisson
- double precision, dimension(:,:), allocatable hert_kn
- double precision, dimension(:,:), allocatable hert_kt
- double precision, dimension(:), allocatable hert_kwn
- double precision, dimension(:), allocatable hert_kwt
- double precision, dimension(:), allocatable g_mod
- LOGICAL PARTICLE_SLIDE
- DOUBLE PRECISION DTSOLID
- DOUBLE PRECISION DTSOLID_FACTOR
- DOUBLE PRECISION S_TIME
- INTEGER DES_NEIGHBOR_SEARCH
- INTEGER NEIGH_MAX
- DOUBLE PRECISION OVERLAP_MAX
- INTEGER QLM
- INTEGER QLN
- INTEGER INIT_QUAD_COUNT
- INTEGER INQC
- INTEGER NQUAD
- INTEGER MAXQUADS
- INTEGER NMQD
- DOUBLE PRECISION N2CT
- DOUBLE PRECISION QUADCT
- DOUBLE PRECISION OCTCT
- DOUBLE PRECISION MQUAD_FACTOR
- DOUBLE PRECISION RADIUS_EQ
- INTEGER NEIGHBOR_SEARCH_N
- DOUBLE PRECISION NEIGHBOR_SEARCH_RAD_RATIO
- LOGICAL DO_NSEARCH
- DOUBLE PRECISION FACTOR_RLM
- INTEGER MN
- INTEGER MAXNEIGHBORS
- INTEGER DIMN
- INTEGER NWALLS
- DOUBLE PRECISION WX1
- DOUBLE PRECISION EX2
- DOUBLE PRECISION BY1
- DOUBLE PRECISION TY2
- DOUBLE PRECISION SZ1
- DOUBLE PRECISION NZ2
- LOGICAL GENER_PART_CONFIG
- DOUBLE PRECISION VOL_FRAC
- DOUBLE PRECISION DES_EPS_XSTART
- DOUBLE PRECISION DES_EPS_YSTART
- DOUBLE PRECISION DES_EPS_ZSTART
- INTEGER PART_MPHASE

- DOUBLE PRECISION pvel_mean
- DOUBLE PRECISION PVEL_StDev
- DOUBLE PRECISION DES_GAMMA
- DOUBLE PRECISION DES_F
- DOUBLE PRECISION LID_VEL
- LOGICAL WALLDTSPLIT
- LOGICAL WALLREFLECT
- INTEGER, dimension(:,:), allocatable c_near_w
- LOGICAL NON_RECT_BC
- LOGICAL DES_PERIODIC_WALLS
- LOGICAL DES_PERIODIC_WALLS_X
- LOGICAL DES_PERIODIC_WALLS_Y
- LOGICAL DES_PERIODIC_WALLS_Z
- DOUBLE PRECISION, dimension(3) pgrad
- DOUBLE PRECISION MIN_RADIUS
- DOUBLE PRECISION MAX_RADIUS
- INTEGER, dimension(:), allocatable MARK_PART
- DOUBLE PRECISION, dimension(:), allocatable bed_height
- DOUBLE PRECISION, dimension(:), allocatable DES_RADIUS
- DOUBLE PRECISION, dimension(:), allocatable RO_Sol
- DOUBLE PRECISION, dimension(:), allocatable PVOL
- DOUBLE PRECISION, dimension(:), allocatable PMASS
- DOUBLE PRECISION, dimension(:), allocatable OMOI
- DOUBLE PRECISION, dimension(:,:), allocatable DES_POS_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable DES_POS_NEW
- DOUBLE PRECISION, dimension(:,:), allocatable DES_VEL_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable DES_VEL_NEW
- DOUBLE PRECISION, dimension(:,:), allocatable OMEGA_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable OMEGA_NEW
- DOUBLE PRECISION, dimension(:,:), allocatable PPOS
- DOUBLE PRECISION, dimension(:,:), allocatable DES_VEL_OOLD
- DOUBLE PRECISION, dimension(:,:), allocatable DES_ACC_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable ROT_ACC_OLD
- LOGICAL CALC_FC
- LOGICAL CALLFROMDES
- DOUBLE PRECISION, dimension(:,:), allocatable FC
- DOUBLE PRECISION, dimension(:,:), allocatable FN
- DOUBLE PRECISION, dimension(:,:), allocatable FT
- DOUBLE PRECISION, dimension(:), allocatable GRAV
- DOUBLE PRECISION, dimension(:,:), allocatable TOW
- DOUBLE PRECISION, dimension(:,:,:), allocatable PFT
- INTEGER, dimension(:,:), allocatable PN
- INTEGER, dimension(:,:), allocatable PV
- DOUBLE PRECISION, dimension(:,:,:), allocatable SOLID_DRAG
- TYPE(iap1), dimension(:,:,:), allocatable pic
- INTEGER, dimension(:), allocatable PINC
- INTEGER, dimension(:,:), allocatable PIJK
- INTEGER, dimension(:,:), allocatable NEIGHBOURS
- INTEGER, dimension(:,:), allocatable LQUAD
- INTEGER, dimension(:), allocatable PQUAD

- DOUBLE PRECISION, dimension(:,:), allocatable CQUAD
- DOUBLE PRECISION, dimension(:,:), allocatable DES_U_s
- DOUBLE PRECISION, dimension(:,:), allocatable DES_V_s
- DOUBLE PRECISION, dimension(:,:), allocatable DES_W_s
- DOUBLE PRECISION, dimension(:), allocatable DES_VEL_AVG
- DOUBLE PRECISION, dimension(:,:), allocatable DES_THETA
- DOUBLE PRECISION, dimension(:), allocatable GLOBAL_GRAN_ENERGY
- DOUBLE PRECISION, dimension(:), allocatable GLOBAL_GRAN_TEMP
- DOUBLE PRECISION DES_KE
- DOUBLE PRECISION DES_PE
- DOUBLE PRECISION, dimension(:), allocatable XE
- DOUBLE PRECISION, dimension(:), allocatable YN
- DOUBLE PRECISION, dimension(:), allocatable ZT
- DOUBLE PRECISION, dimension(:,:), allocatable DES_WALL_POS
- DOUBLE PRECISION, dimension(:,:), allocatable DES_WALL_VEL
- DOUBLE PRECISION, dimension(:,:), allocatable WALL_NORMAL
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable drag_am
- DOUBLE PRECISION, dimension(:,:,:,:,:), allocatable drag_bm
- DOUBLE PRECISION, dimension(:,:), allocatable vel_fp
- DOUBLE PRECISION, dimension(:,:,:), pointer weightp
- DOUBLE PRECISION, dimension(:), allocatable f_gp
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable wtderivp
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable wtbar
- DOUBLE PRECISION, dimension(:,:,:), allocatable sstencil
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable gstencil
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable vstencil
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable pgradstencil
- CHARACTER(LEN=7) scheme
- CHARACTER(LEN=7) interp_scheme
- INTEGER order
- INTEGER ob2l
- INTEGER ob2r
- LOGICAL, dimension(:,:), allocatable PEA
- INTEGER PIS
- INTEGER MAX_PIS
- DOUBLE PRECISION, dimension(:), allocatable WELL_WIDTH
- DOUBLE PRECISION, dimension(:), allocatable WELL_DEPTH
- DOUBLE PRECISION MASTER_WELL_DEPTH
- DOUBLE PRECISION MASTER_WALL_WELL_DEPTH
- DOUBLE PRECISION RADIUS_RATIO
- DOUBLE PRECISION WALL_RADIUS_RATIO
- INTEGER, dimension(:,:), allocatable LINKS
- INTEGER, dimension(:,:), allocatable AGGS
- INTEGER, dimension(:), allocatable IS_LINKED
- LOGICAL USE_COHESION
- LOGICAL SQUARE_WELL
- INTEGER COHESION_DEBUG
- INTEGER COHESION_DEBUG_START
- INTEGER COH_DEBUG_PARTICLE
- INTEGER COH_DEBUG_STEP

- INTEGER LAST_COLLISION
- INTEGER ANIMATION_WRITE_INTERVAL
- INTEGER ANIMATION_WRITE_COUNTER
- DOUBLE PRECISION TIME_FACTOR
- INTEGER MAX_ANIMATOR_STEP
- INTEGER MIN_ANIMATOR_STEP
- INTEGER MAX_LOG_STEP
- INTEGER MIN_LOG_STEP
- INTEGER, dimension(:), allocatable IS_AGGLOMERATED
- INTEGER SEARCH_GRIDS
- INTEGER PART_IN_GRID
- INTEGER, dimension(:,:), allocatable PART_GRID
- INTEGER MAX_PART_IN_GRID
- DOUBLE PRECISION SEARCH_GRID_SIZE
- LOGICAL USE_COL_MW
- LOGICAL VAN_DER_WAALS
- DOUBLE PRECISION HAMAKER_CONSTANT
- DOUBLE PRECISION VDW_INNER_CUTOFF
- DOUBLE PRECISION VDW_OUTER_CUTOFF
- DOUBLE PRECISION WALL_HAMAKER_CONSTANT
- DOUBLE PRECISION WALL_VDW_INNER_CUTOFF
- DOUBLE PRECISION WALL_VDW_OUTER_CUTOFF
- DOUBLE PRECISION SURFACE_ENERGY
- DOUBLE PRECISION WALL_SURFACE_ENERGY
- LOGICAL RHODES_COHESION
- DOUBLE PRECISION RHODES_COHESION_FACTOR
- DOUBLE PRECISION RHODES_COHESION_FACTOR_WALL
- DOUBLE PRECISION RHODES_COHESION_LENGTH_SCALE
- DOUBLE PRECISION RHODES_COHESION_LENGTH_SCALE_WALL
- LOGICAL RECORD_NET_FORCES
- INTEGER VERTICAL_NET_FORCE_BINS
- DOUBLE PRECISION NET_FORCE_COUNTER
- DOUBLE PRECISION VERTICAL_NET_FORCE_INCREMENT
- DOUBLE PRECISION NET_FORCE_TIME_INCREMENT
- DOUBLE PRECISION TIME_AT_PREVIOUS_NET_FORCE
- DOUBLE PRECISION NET_PART_TAN_FORCE
- DOUBLE PRECISION NET_WALL_TAN_FORCE
- DOUBLE PRECISION NET_PART_NORM_FORCE
- DOUBLE PRECISION NET_WALL_NORM_FORCE
- DOUBLE PRECISION NET_GRAVITY_FORCE
- DOUBLE PRECISION NET_PART_COH_FORCE
- DOUBLE PRECISION NET_WALL_COH_FORCE
- DOUBLE PRECISION NET_FLUID_DRAG_FORCE
- DOUBLE PRECISION NET_PRESSURE_FORCE
- INTEGER APP_COH_DIST_INT
- INTEGER CAP_COH_DIST_INT
- INTEGER ESC_COH_DIST_INT

### 4.2.1 Variable Documentation

#### 4.2.1.1 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::AGGS

Definition at line 393 of file discretelement_mod.f.

#### 4.2.1.2 INTEGER DISCRETELEMENT::ANIMATION_WRITE_COUNTER

Definition at line 419 of file discretelement_mod.f.

#### 4.2.1.3 INTEGER DISCRETELEMENT::ANIMATION_WRITE_INTERVAL

Definition at line 418 of file discretelement_mod.f.

#### 4.2.1.4 INTEGER DISCRETELEMENT::APP_COH_DIST_INT

Definition at line 484 of file discretelement_mod.f.

#### 4.2.1.5 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::bed_height

Definition at line 210 of file discretelement_mod.f.

#### 4.2.1.6 DOUBLE PRECISION DISCRETELEMENT::BY1

Definition at line 160 of file discretelement_mod.f.

#### 4.2.1.7 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::c_near_w

Definition at line 191 of file discretelement_mod.f.

#### 4.2.1.8 LOGICAL DISCRETELEMENT::CALC_FC

Definition at line 235 of file discretelement_mod.f.
Referenced by DRAG_FGS().

#### 4.2.1.9 LOGICAL DISCRETELEMENT::CALLFROMDES

Definition at line 242 of file discretelement_mod.f.
Referenced by DRAG_FGS().

#### 4.2.1.10 INTEGER DISCRETELEMENT::CAP_COH_DIST_INT

Definition at line 485 of file discretelement_mod.f.

#### 4.2.1.11 INTEGER DISCRETELEMENT::COH_DEBUG_PARTICLE

Definition at line 409 of file discretelement_mod.f.

#### 4.2.1.12 INTEGER DISCRETELEMENT::COH_DEBUG_STEP

Definition at line 412 of file discretelement_mod.f.

#### 4.2.1.13 INTEGER DISCRETELEMENT::COHESION_DEBUG

Definition at line 405 of file discretelement_mod.f.

#### 4.2.1.14 INTEGER DISCRETELEMENT::COHESION_DEBUG_START

Definition at line 406 of file discretelement_mod.f.

#### 4.2.1.15 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::CQUAD

Definition at line 282 of file discretelement_mod.f.

#### 4.2.1.16 LOGICAL DISCRETELEMENT::DEBUG_DES

Definition at line 33 of file discretelement_mod.f.

#### 4.2.1.17 LOGICAL DISCRETELEMENT::DEM_OUTPUT_DATA_TECPLOT

Definition at line 30 of file discretelement_mod.f.

#### 4.2.1.18 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_ACC_OLD

Definition at line 229 of file discretelement_mod.f.

#### 4.2.1.19 CHARACTER(64) DISCRETELEMENT::DES_COLL_MODEL

Definition at line 101 of file discretelement_mod.f.

#### 4.2.1.20 LOGICAL DISCRETELEMENT::DES_CONTINUUM_COUPLED

Definition at line 54 of file discretelement_mod.f.

#### 4.2.1.21 DOUBLE PRECISION DISCRETELEMENT::DES_EN_INPUT

Definition at line 89 of file discretelement_mod.f.

#### 4.2.1.22 DOUBLE PRECISION DISCRETELEMENT::DES_EN_WALL_INPUT

Definition at line 92 of file discretelement_mod.f.

#### 4.2.1.23 DOUBLE PRECISION DISCRETELEMENT::DES_EPS_XSTART

Definition at line 167 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG().

#### 4.2.1.24 DOUBLE PRECISION DISCRETELEMENT::DES_EPS_YSTART

Definition at line 167 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG().

#### 4.2.1.25 DOUBLE PRECISION DISCRETELEMENT::DES_EPS_ZSTART

Definition at line 167 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG().

#### 4.2.1.26 DOUBLE PRECISION DISCRETELEMENT::DES_ET_INPUT

Definition at line 90 of file discretelement_mod.f.

#### 4.2.1.27 DOUBLE PRECISION DISCRETELEMENT::DES_ET_WALL_INPUT

Definition at line 93 of file discretelement_mod.f.

#### 4.2.1.28 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_ETAN

Definition at line 83 of file discretelement_mod.f.

#### 4.2.1.29 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::DES_ETAN_WALL

Definition at line 84 of file discretelement_mod.f.

#### 4.2.1.30 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_ETAT

Definition at line 83 of file discretelement_mod.f.

#### 4.2.1.31 DOUBLE PRECISION DISCRETELEMENT::DES_ETAT_FAC

Definition at line 81 of file discretelement_mod.f.

#### 4.2.1.32 DOUBLE PRECISION DISCRETELEMENT::DES_ETAT_W_FAC

Definition at line 81 of file discretelement_mod.f.

#### 4.2.1.33 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::DES_ETAT_WALL

Definition at line 84 of file discretelement_mod.f.

#### 4.2.1.34 INTEGER,parameter DISCRETELEMENT::DES_EXTRA_UNIT = 2000

Definition at line 42 of file discretelement_mod.f.

#### 4.2.1.35 DOUBLE PRECISION DISCRETELEMENT::DES_F

Definition at line 180 of file discretelement_mod.f.

#### 4.2.1.36 DOUBLE PRECISION DISCRETELEMENT::DES_GAMMA

Definition at line 180 of file discretelement_mod.f.

#### 4.2.1.37 LOGICAL DISCRETELEMENT::DES_INTERP_ON

Definition at line 63 of file discretelement_mod.f.

Referenced by DRAG_FGS(), and GAS_DRAG().

#### 4.2.1.38 CHARACTER(64) DISCRETELEMENT::DES_INTG_METHOD

Definition at line 71 of file discretelement_mod.f.

#### 4.2.1.39 DOUBLE PRECISION DISCRETELEMENT::DES_KE

Definition at line 301 of file discretelement_mod.f.

#### 4.2.1.40 INTEGER DISCRETELEMENT::DES_NEIGHBOR_SEARCH

Definition at line 122 of file discretelement_mod.f.

#### 4.2.1.41 DOUBLE PRECISION DISCRETELEMENT::DES_PE

Definition at line 301 of file discretelement_mod.f.

#### 4.2.1.42 LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS

Definition at line 197 of file discretelement_mod.f.

Referenced by DRAG_FGS(), INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.43 LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS_X

Definition at line 198 of file discretelement_mod.f.

Referenced by DRAG_FGS(), GRID_BASED_NEIGHBOR_SEARCH(), INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.44 LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS_Y

Definition at line 199 of file discretelement_mod.f.

Referenced by DRAG_FGS(), GRID_BASED_NEIGHBOR_SEARCH(), INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.45 LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS_Z

Definition at line 200 of file discretelement_mod.f.

Referenced by DRAG_FGS(), GRID_BASED_NEIGHBOR_SEARCH(), INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.46 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_POS_NEW

Definition at line 222 of file discretelement_mod.f.

Referenced by DRAG_FGS(), GENERATE_PARTICLE_CONFIG(), GRID_BASED_NEIGHBOR_SEARCH(), SET_INITIAL_VELOCITY(), and writeic().

#### 4.2.1.47 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_POS_OLD

Definition at line 221 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG(), and init_particles_jn().

#### 4.2.1.48 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::DES_RADIUS

Definition at line 213 of file discretelement_mod.f.

Referenced by DES_DRAG_GS(), GENERATE_PARTICLE_CONFIG(), GRID_BASED_NEIGHBOR_SEARCH(), and init_particles_jn().

#### 4.2.1.49 DOUBLE PRECISION DISCRETELEMENT::DES_RES_DT

Definition at line 27 of file discretelement_mod.f.

#### 4.2.1.50 DOUBLE PRECISION DISCRETELEMENT::DES_SPX_DT

Definition at line 27 of file discretelement_mod.f.

#### 4.2.1.51 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_THETA

Definition at line 293 of file discretelement_mod.f.

#### 4.2.1.52 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_U_s

Definition at line 285 of file discretelement_mod.f.

#### 4.2.1.53 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_V_s

Definition at line 286 of file discretelement_mod.f.

#### 4.2.1.54 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::DES_VEL_AVG

Definition at line 290 of file discretelement_mod.f.

#### 4.2.1.55 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_VEL_NEW

Definition at line 224 of file discretelement_mod.f.

Referenced by DRAG_FGS(), GENERATE_PARTICLE_CONFIG(), init_particles_jn(), SET_INITIAL_VELOCITY(), and writeic().

#### 4.2.1.56 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_VEL_OLD

Definition at line 223 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG(), init_particles_jn(), and SET_INITIAL_VELOCITY().

#### 4.2.1.57 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_VEL_OOLD

Definition at line 228 of file discretelement_mod.f.

#### 4.2.1.58 INTEGER,parameter DISCRETELEMENT::DES_VOLFRAC_UNIT = 2001

Definition at line 42 of file discretelement_mod.f.

#### 4.2.1.59 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_W_s

Definition at line 287 of file discretelement_mod.f.

#### 4.2.1.60 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_WALL_POS

Definition at line 310 of file discretelement_mod.f.

#### 4.2.1.61 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::DES_WALL_VEL

Definition at line 311 of file discretelement_mod.f.

#### 4.2.1.62 INTEGER DISCRETELEMENT::DIMN

Definition at line 153 of file discretelement_mod.f.

Referenced by DES_DRAG_GS(), GAS_DRAG(), INTERPOLATE_QUANTS(), SET_INITIAL_VELOCITY(), and writeic().

#### 4.2.1.63 LOGICAL DISCRETELEMENT::DISCRETE_ELEMENT

Definition at line 53 of file discretelement_mod.f.

#### 4.2.1.64 LOGICAL DISCRETELEMENT::DO_NSEARCH

Definition at line 137 of file discretelement_mod.f.

#### 4.2.1.65 DOUBLE PRECISION,dimension(:,:,:,:),allocatable DISCRETELEMENT::drag_am

Definition at line 319 of file discretelement_mod.f.

Referenced by DRAG_FGS().

#### 4.2.1.66 DOUBLE PRECISION,dimension(:,:,:,:,:),allocatable DISCRETELEMENT::drag_bm

Definition at line 322 of file discretelement_mod.f.

Referenced by DRAG_FGS().

#### 4.2.1.67 DOUBLE PRECISION DISCRETELEMENT::DTSOLID

Definition at line 114 of file discretelement_mod.f.

#### 4.2.1.68 DOUBLE PRECISION DISCRETELEMENT::DTSOLID_FACTOR

Definition at line 116 of file discretelement_mod.f.

#### 4.2.1.69 double precision,dimension(dim_m) DISCRETELEMENT::e_young

Definition at line 105 of file discretelement_mod.f.

#### 4.2.1.70 INTEGER DISCRETELEMENT::ESC_COH_DIST_INT

Definition at line 486 of file discretelement_mod.f.

#### 4.2.1.71 DOUBLE PRECISION DISCRETELEMENT::ETA_DES_N

Definition at line 78 of file discretelement_mod.f.

#### 4.2.1.72 DOUBLE PRECISION DISCRETELEMENT::ETA_DES_T

Definition at line 79 of file discretelement_mod.f.

#### 4.2.1.73 DOUBLE PRECISION DISCRETELEMENT::ETA_N_W

Definition at line 78 of file discretelement_mod.f.

#### 4.2.1.74 DOUBLE PRECISION DISCRETELEMENT::ETA_T_W

Definition at line 79 of file discretelement_mod.f.

#### 4.2.1.75 double precision DISCRETELEMENT::ew_young

Definition at line 104 of file discretelement_mod.f.

#### 4.2.1.76 DOUBLE PRECISION DISCRETELEMENT::EX2

Definition at line 160 of file discretelement_mod.f.

#### 4.2.1.77 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::f_gp

Definition at line 328 of file discretelement_mod.f.

#### 4.2.1.78 DOUBLE PRECISION DISCRETELEMENT::FACTOR_RLM

Definition at line 142 of file discretelement_mod.f.
Referenced by GRID_BASED_NEIGHBOR_SEARCH().

#### 4.2.1.79 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::FC

Definition at line 245 of file discretelement_mod.f.
Referenced by DRAG_FGS().

#### 4.2.1.80 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::FN

Definition at line 246 of file discretelement_mod.f.

#### 4.2.1.81 INTEGER DISCRETELEMENT::FOCUS_PARTICLE

Definition at line 36 of file discretelement_mod.f.

Referenced by DRAG_FGS().

#### 4.2.1.82 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::FT

Definition at line 247 of file discretelement_mod.f.

#### 4.2.1.83 double precision,dimension(:),allocatable DISCRETELEMENT::g_mod

Definition at line 108 of file discretelement_mod.f.

#### 4.2.1.84 LOGICAL DISCRETELEMENT::GENER_PART_CONFIG

Definition at line 166 of file discretelement_mod.f.

Referenced by init_particles_jn().

#### 4.2.1.85 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::GLOBAL_-GRAN_ENERGY

Definition at line 296 of file discretelement_mod.f.

#### 4.2.1.86 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::GLOBAL_-GRAN_TEMP

Definition at line 297 of file discretelement_mod.f.

#### 4.2.1.87 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::GRAV

Definition at line 248 of file discretelement_mod.f.

#### 4.2.1.88 DOUBLE PRECISION,dimension(:,:,:,:),allocatable DISCRETELEMENT::gstencil

Definition at line 331 of file discretelement_mod.f.

Referenced by SET_INITIAL_VELOCITY().

#### 4.2.1.89 DOUBLE PRECISION DISCRETELEMENT::HAMAKER_CONSTANT

Definition at line 452 of file discretelement_mod.f.

#### 4.2.1.90 double precision,dimension(:,:),allocatable DISCRETELEMENT::hert_kn

Definition at line 106 of file discretelement_mod.f.

#### 4.2.1.91 double precision,dimension(:,:),allocatable DISCRETELEMENT::hert_kt

Definition at line 106 of file discretelement_mod.f.

#### 4.2.1.92 double precision,dimension(:),allocatable DISCRETELEMENT::hert_kwn

Definition at line 107 of file discretelement_mod.f.

#### 4.2.1.93 double precision,dimension(:),allocatable DISCRETELEMENT::hert_kwt

Definition at line 107 of file discretelement_mod.f.

#### 4.2.1.94 INTEGER DISCRETELEMENT::IFI

Definition at line 39 of file discretelement_mod.f.

#### 4.2.1.95 INTEGER DISCRETELEMENT::INIT_QUAD_COUNT

Definition at line 128 of file discretelement_mod.f.

#### 4.2.1.96 INTEGER DISCRETELEMENT::INQC

Definition at line 128 of file discretelement_mod.f.

#### 4.2.1.97 CHARACTER(LEN=7) DISCRETELEMENT::interp_scheme

Definition at line 336 of file discretelement_mod.f.
Referenced by SET_INITIAL_VELOCITY().

#### 4.2.1.98 INTEGER,dimension(:),allocatable DISCRETELEMENT::IS_AGGLOMERATED

Definition at line 429 of file discretelement_mod.f.

#### 4.2.1.99 INTEGER,dimension(:),allocatable DISCRETELEMENT::IS_LINKED

Definition at line 396 of file discretelement_mod.f.

#### 4.2.1.100 DOUBLE PRECISION DISCRETELEMENT::KN

Definition at line 75 of file discretelement_mod.f.

#### 4.2.1.101 DOUBLE PRECISION DISCRETELEMENT::KN_W

Definition at line 75 of file discretelement_mod.f.

#### 4.2.1.102 DOUBLE PRECISION DISCRETELEMENT::KT

Definition at line 76 of file discretelement_mod.f.

#### 4.2.1.103 DOUBLE PRECISION DISCRETELEMENT::KT_FAC

Definition at line 76 of file discretelement_mod.f.

#### 4.2.1.104 DOUBLE PRECISION DISCRETELEMENT::KT_W

Definition at line 76 of file discretelement_mod.f.

#### 4.2.1.105 DOUBLE PRECISION DISCRETELEMENT::KT_W_FAC

Definition at line 76 of file discretelement_mod.f.

#### 4.2.1.106 INTEGER DISCRETELEMENT::LAST_COLLISION

Definition at line 415 of file discretelement_mod.f.

#### 4.2.1.107 DOUBLE PRECISION DISCRETELEMENT::LID_VEL

Definition at line 183 of file discretelement_mod.f.

#### 4.2.1.108 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::LINKS

Definition at line 390 of file discretelement_mod.f.

#### 4.2.1.109 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::LQUAD

Definition at line 280 of file discretelement_mod.f.

#### 4.2.1.110 INTEGER,dimension(:),allocatable DISCRETELEMENT::MARK_PART

Definition at line 207 of file discretelement_mod.f.

#### 4.2.1.111 DOUBLE PRECISION DISCRETELEMENT::MASTER_WALL_WELL_DEPTH

Definition at line 383 of file discretelement_mod.f.

#### 4.2.1.112 DOUBLE PRECISION DISCRETELEMENT::MASTER_WELL_DEPTH

Definition at line 382 of file discretelement_mod.f.

#### 4.2.1.113 INTEGER DISCRETELEMENT::MAX_ANIMATOR_STEP

Definition at line 421 of file discretelement_mod.f.

#### 4.2.1.114 INTEGER DISCRETELEMENT::MAX_LOG_STEP

Definition at line 425 of file discretelement_mod.f.

#### 4.2.1.115 INTEGER DISCRETELEMENT::MAX_PART_IN_GRID

Definition at line 442 of file discretelement_mod.f.

#### 4.2.1.116 INTEGER DISCRETELEMENT::MAX_PIS

Definition at line 367 of file discretelement_mod.f.
Referenced by DRAG_FGS(), and GRID_BASED_NEIGHBOR_SEARCH().

#### 4.2.1.117 DOUBLE PRECISION DISCRETELEMENT::MAX_RADIUS

Definition at line 206 of file discretelement_mod.f.

#### 4.2.1.118 INTEGER DISCRETELEMENT::MAXNEIGHBORS

Definition at line 149 of file discretelement_mod.f.

#### 4.2.1.119 INTEGER DISCRETELEMENT::MAXQUADS

Definition at line 129 of file discretelement_mod.f.

#### 4.2.1.120 DOUBLE PRECISION DISCRETELEMENT::MEW

Definition at line 86 of file discretelement_mod.f.

#### 4.2.1.121 DOUBLE PRECISION DISCRETELEMENT::MEW_W

Definition at line 86 of file discretelement_mod.f.

#### 4.2.1.122 INTEGER DISCRETELEMENT::MIN_ANIMATOR_STEP

Definition at line 422 of file discretelement_mod.f.

#### 4.2.1.123 INTEGER DISCRETELEMENT::MIN_LOG_STEP

Definition at line 426 of file discretelement_mod.f.

#### 4.2.1.124 DOUBLE PRECISION DISCRETELEMENT::MIN_RADIUS

Definition at line 206 of file discretelement_mod.f.

#### 4.2.1.125 INTEGER DISCRETELEMENT::MN

Definition at line 145 of file discretelement_mod.f.

Referenced by GRID_BASED_NEIGHBOR_SEARCH().

#### 4.2.1.126 DOUBLE PRECISION DISCRETELEMENT::MQUAD_FACTOR

Definition at line 130 of file discretelement_mod.f.

#### 4.2.1.127 DOUBLE PRECISION DISCRETELEMENT::N2CT

Definition at line 130 of file discretelement_mod.f.

#### 4.2.1.128 INTEGER DISCRETELEMENT::NEIGH_MAX

Definition at line 125 of file discretelement_mod.f.

#### 4.2.1.129 INTEGER DISCRETELEMENT::NEIGHBOR_SEARCH_N

Definition at line 135 of file discretelement_mod.f.

#### 4.2.1.130 DOUBLE PRECISION DISCRETELEMENT::NEIGHBOR_SEARCH_RAD_RATIO

Definition at line 136 of file discretelement_mod.f.

#### 4.2.1.131 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::NEIGHBOURS

Definition at line 277 of file discretelement_mod.f.

Referenced by GRID_BASED_NEIGHBOR_SEARCH().

#### 4.2.1.132 DOUBLE PRECISION DISCRETELEMENT::NET_FLUID_DRAG_FORCE

Definition at line 482 of file discretelement_mod.f.

#### 4.2.1.133 DOUBLE PRECISION DISCRETELEMENT::NET_FORCE_COUNTER

Definition at line 471 of file discretelement_mod.f.

#### 4.2.1.134 DOUBLE PRECISION DISCRETELEMENT::NET_FORCE_TIME_INCREMENT

Definition at line 473 of file discretelement_mod.f.

#### 4.2.1.135 DOUBLE PRECISION DISCRETELEMENT::NET_GRAVITY_FORCE

Definition at line 479 of file discretelement_mod.f.

#### 4.2.1.136 DOUBLE PRECISION DISCRETELEMENT::NET_PART_COH_FORCE

Definition at line 480 of file discretelement_mod.f.

#### 4.2.1.137 DOUBLE PRECISION DISCRETELEMENT::NET_PART_NORM_FORCE

Definition at line 477 of file discretelement_mod.f.

#### 4.2.1.138 DOUBLE PRECISION DISCRETELEMENT::NET_PART_TAN_FORCE

Definition at line 475 of file discretelement_mod.f.

#### 4.2.1.139 DOUBLE PRECISION DISCRETELEMENT::NET_PRESSURE_FORCE

Definition at line 483 of file discretelement_mod.f.

#### 4.2.1.140 DOUBLE PRECISION DISCRETELEMENT::NET_WALL_COH_FORCE

Definition at line 481 of file discretelement_mod.f.

#### 4.2.1.141 DOUBLE PRECISION DISCRETELEMENT::NET_WALL_NORM_FORCE

Definition at line 478 of file discretelement_mod.f.

#### 4.2.1.142 DOUBLE PRECISION DISCRETELEMENT::NET_WALL_TAN_FORCE

Definition at line 476 of file discretelement_mod.f.

#### 4.2.1.143 INTEGER DISCRETELEMENT::NFACTOR

Definition at line 58 of file discretelement_mod.f.

#### 4.2.1.144 INTEGER DISCRETELEMENT::NMQD

Definition at line 129 of file discretelement_mod.f.

#### 4.2.1.145 LOGICAL DISCRETELEMENT::NON_RECT_BC

Definition at line 194 of file discretelement_mod.f.

#### 4.2.1.146 INTEGER DISCRETELEMENT::NQUAD

Definition at line 129 of file discretelement_mod.f.

#### 4.2.1.147 INTEGER DISCRETELEMENT::NWALLS

Definition at line 156 of file discretelement_mod.f.

#### 4.2.1.148 DOUBLE PRECISION DISCRETELEMENT::NZ2

Definition at line 160 of file discretelement_mod.f.

#### 4.2.1.149 INTEGER DISCRETELEMENT::ob2l

Definition at line 337 of file discretelement_mod.f.

#### 4.2.1.150 INTEGER DISCRETELEMENT::ob2r

Definition at line 337 of file discretelement_mod.f.

#### 4.2.1.151 DOUBLE PRECISION DISCRETELEMENT::OCTCT

Definition at line 130 of file discretelement_mod.f.

#### 4.2.1.152 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::OMEGA_NEW

Definition at line 226 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG().

#### 4.2.1.153 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::OMEGA_OLD

Definition at line 225 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG().

#### 4.2.1.154 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::OMOI

Definition at line 217 of file discretelement_mod.f.

#### 4.2.1.155 INTEGER DISCRETELEMENT::order

Definition at line 337 of file discretelement_mod.f.

#### 4.2.1.156 DOUBLE PRECISION DISCRETELEMENT::OVERLAP_MAX

Definition at line 126 of file discretelement_mod.f.

#### 4.2.1.157 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::PART_GRID

Definition at line 439 of file discretelement_mod.f.

#### 4.2.1.158 INTEGER DISCRETELEMENT::PART_IN_GRID

Definition at line 436 of file discretelement_mod.f.

#### 4.2.1.159 INTEGER DISCRETELEMENT::PART_MPHASE

Definition at line 172 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG().

#### 4.2.1.160 LOGICAL DISCRETELEMENT::PARTICLE_SLIDE

Definition at line 111 of file discretelement_mod.f.

#### 4.2.1.161 INTEGER DISCRETELEMENT::PARTICLES

Definition at line 47 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG(), init_particles_jn(), and SET_INITIAL_-VELOCITY().

#### 4.2.1.162 DOUBLE PRECISION DISCRETELEMENT::PARTICLES_FACTOR

Definition at line 50 of file discretelement_mod.f.

#### 4.2.1.163 LOGICAL,dimension(:,:),allocatable DISCRETELEMENT::PEA

Definition at line 361 of file discretelement_mod.f.

Referenced by DRAG_FGS(), and GRID_BASED_NEIGHBOR_SEARCH().

#### 4.2.1.164 DOUBLE PRECISION,dimension(:,:,:),allocatable DISCRETELEMENT::PFT

Definition at line 254 of file discretelement_mod.f.

#### 4.2.1.165 DOUBLE PRECISION,dimension(3) DISCRETELEMENT::pgrad

Definition at line 203 of file discretelement_mod.f.

#### 4.2.1.166 DOUBLE PRECISION,dimension(:,:,:,:),allocatable DISCRETELEMENT::pgradstencil

Definition at line 331 of file discretelement_mod.f.

#### 4.2.1.167 TYPE(iap1),dimension(:,:,:),allocatable DISCRETELEMENT::pic

Definition at line 268 of file discretelement_mod.f.

#### 4.2.1.168 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::PIJK

Definition at line 274 of file discretelement_mod.f.

Referenced by DES_DRAG_GS(), DRAG_FGS(), GRID_BASED_NEIGHBOR_SEARCH(), and SET_INITIAL_VELOCITY().

#### 4.2.1.169 INTEGER,dimension(:),allocatable DISCRETELEMENT::PINC

Definition at line 271 of file discretelement_mod.f.

Referenced by DRAG_FGS().

#### 4.2.1.170 INTEGER DISCRETELEMENT::PIS

Definition at line 364 of file discretelement_mod.f.

Referenced by DRAG_FGS(), and GRID_BASED_NEIGHBOR_SEARCH().

#### 4.2.1.171 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::PMASS

Definition at line 216 of file discretelement_mod.f.

#### 4.2.1.172 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::PN

Definition at line 257 of file discretelement_mod.f.

#### 4.2.1.173 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::PPOS

Definition at line 227 of file discretelement_mod.f.

#### 4.2.1.174 INTEGER,dimension(:),allocatable DISCRETELEMENT::PQUAD

Definition at line 281 of file discretelement_mod.f.

#### 4.2.1.175 LOGICAL DISCRETELEMENT::PRINT_DES_DATA

Definition at line 21 of file discretelement_mod.f.

#### 4.2.1.176 INTEGER,dimension(:,:),allocatable DISCRETELEMENT::PV

Definition at line 258 of file discretelement_mod.f.

#### 4.2.1.177 DOUBLE PRECISION DISCRETELEMENT::pvel_mean

Definition at line 177 of file discretelement_mod.f.

Referenced by init_particles_jn().

#### 4.2.1.178 DOUBLE PRECISION DISCRETELEMENT::PVEL_StDev

Definition at line 177 of file discretelement_mod.f.

Referenced by init_particles_jn().

#### 4.2.1.179 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::PVOL

Definition at line 215 of file discretelement_mod.f.

Referenced by DES_DRAG_GS(), and DRAG_FGS().

#### 4.2.1.180 INTEGER DISCRETELEMENT::QLM

Definition at line 128 of file discretelement_mod.f.

#### 4.2.1.181 INTEGER DISCRETELEMENT::QLN

Definition at line 128 of file discretelement_mod.f.

#### 4.2.1.182 DOUBLE PRECISION DISCRETELEMENT::QUADCT

Definition at line 130 of file discretelement_mod.f.

#### 4.2.1.183 DOUBLE PRECISION DISCRETELEMENT::RADIUS_EQ

Definition at line 131 of file discretelement_mod.f.

#### 4.2.1.184 DOUBLE PRECISION DISCRETELEMENT::RADIUS_RATIO

Definition at line 386 of file discretelement_mod.f.

#### 4.2.1.185 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::REAL_EN

Definition at line 95 of file discretelement_mod.f.

#### 4.2.1.186 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::REAL_EN_WALL

Definition at line 96 of file discretelement_mod.f.

#### 4.2.1.187 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::REAL_ET

Definition at line 95 of file discretelement_mod.f.

#### 4.2.1.188 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::REAL_ET_WALL

Definition at line 96 of file discretelement_mod.f.

#### 4.2.1.189 LOGICAL DISCRETELEMENT::RECORD_NET_FORCES

Definition at line 469 of file discretelement_mod.f.

#### 4.2.1.190 LOGICAL DISCRETELEMENT::RHODES_COHESION

Definition at line 462 of file discretelement_mod.f.

#### 4.2.1.191 DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_FACTOR

Definition at line 463 of file discretelement_mod.f.

#### 4.2.1.192 DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_FACTOR_WALL

Definition at line 464 of file discretelement_mod.f.

#### 4.2.1.193 DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_LENGTH_SCALE

Definition at line 465 of file discretelement_mod.f.

#### 4.2.1.194 DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_LENGTH_SCALE_WALL

Definition at line 466 of file discretelement_mod.f.

#### 4.2.1.195 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::RO_Sol

Definition at line 214 of file discretelement_mod.f.

Referenced by GENERATE_PARTICLE_CONFIG(), and init_particles_jn().

#### 4.2.1.196 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::ROT_ACC_-OLD

Definition at line 230 of file discretelement_mod.f.

#### 4.2.1.197 DOUBLE PRECISION DISCRETELEMENT::S_TIME

Definition at line 118 of file discretelement_mod.f.

#### 4.2.1.198 CHARACTER(LEN=7) DISCRETELEMENT::scheme

Definition at line 336 of file discretelement_mod.f.

#### 4.2.1.199 DOUBLE PRECISION DISCRETELEMENT::SEARCH_GRID_SIZE

Definition at line 445 of file discretelement_mod.f.

#### 4.2.1.200 INTEGER DISCRETELEMENT::SEARCH_GRIDS

Definition at line 433 of file discretelement_mod.f.

#### 4.2.1.201 DOUBLE PRECISION,dimension(:,:,:),allocatable DISCRETELEMENT::SOLID_-DRAG

Definition at line 261 of file discretelement_mod.f.

Referenced by DRAG_FGS().

#### 4.2.1.202 LOGICAL DISCRETELEMENT::SQUARE_WELL

Definition at line 402 of file discretelement_mod.f.

#### 4.2.1.203 DOUBLE PRECISION,dimension(:,:,:),allocatable DISCRETELEMENT::sstencil

Definition at line 330 of file discretelement_mod.f.

#### 4.2.1.204 DOUBLE PRECISION DISCRETELEMENT::SURFACE_ENERGY

Definition at line 458 of file discretelement_mod.f.

#### 4.2.1.205 DOUBLE PRECISION DISCRETELEMENT::SZ1

Definition at line 160 of file discretelement_mod.f.

#### 4.2.1.206 DOUBLE PRECISION DISCRETELEMENT::TIME_AT_PREVIOUS_NET_FORCE

Definition at line 474 of file discretelement_mod.f.

#### 4.2.1.207 DOUBLE PRECISION DISCRETELEMENT::TIME_FACTOR

Definition at line 420 of file discretelement_mod.f.

#### 4.2.1.208 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::TOW

Definition at line 251 of file discretelement_mod.f.

#### 4.2.1.209 LOGICAL DISCRETELEMENT::TSUJI_DRAG

Definition at line 66 of file discretelement_mod.f.

Referenced by DES_DRAG_GS().

#### 4.2.1.210 DOUBLE PRECISION DISCRETELEMENT::TY2

Definition at line 160 of file discretelement_mod.f.

#### 4.2.1.211 LOGICAL DISCRETELEMENT::USE_COHESION

Definition at line 399 of file discretelement_mod.f.

#### 4.2.1.212 LOGICAL DISCRETELEMENT::USE_COL_MW

Definition at line 448 of file discretelement_mod.f.

#### 4.2.1.213 double precision,dimension(dim_m) DISCRETELEMENT::v_poisson

Definition at line 105 of file discretelement_mod.f.

#### 4.2.1.214 LOGICAL DISCRETELEMENT::VAN_DER_WAALS

Definition at line 451 of file discretelement_mod.f.

#### 4.2.1.215 DOUBLE PRECISION DISCRETELEMENT::VDW_INNER_CUTOFF

Definition at line 453 of file discretelement_mod.f.

#### 4.2.1.216 DOUBLE PRECISION DISCRETELEMENT::VDW_OUTER_CUTOFF

Definition at line 454 of file discretelement_mod.f.

#### 4.2.1.217 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::vel_fp

Definition at line 325 of file discretelement_mod.f.

Referenced by SET_INITIAL_VELOCITY().

#### 4.2.1.218 INTEGER DISCRETELEMENT::VERTICAL_NET_FORCE_BINS

Definition at line 470 of file discretelement_mod.f.

#### 4.2.1.219 DOUBLE PRECISION DISCRETELEMENT::VERTICAL_NET_FORCE_-INCREMENT

Definition at line 472 of file discretelement_mod.f.

#### 4.2.1.220 DOUBLE PRECISION DISCRETELEMENT::VOL_FRAC

Definition at line 167 of file discretelement_mod.f.

#### 4.2.1.221 DOUBLE PRECISION,dimension(:,:,:,:),allocatable DISCRETELEMENT::vstencil

Definition at line 331 of file discretelement_mod.f.

Referenced by DRAG_FGS(), INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.222 double precision DISCRETELEMENT::vw_poisson

Definition at line 104 of file discretelement_mod.f.

#### 4.2.1.223 DOUBLE PRECISION DISCRETELEMENT::WALL_HAMAKER_CONSTANT

Definition at line 455 of file discretelement_mod.f.

#### 4.2.1.224 DOUBLE PRECISION,dimension(:,:),allocatable DISCRETELEMENT::WALL_-NORMAL

Definition at line 312 of file discretelement_mod.f.

#### 4.2.1.225 DOUBLE PRECISION DISCRETELEMENT::WALL_RADIUS_RATIO

Definition at line 387 of file discretelement_mod.f.

#### 4.2.1.226 DOUBLE PRECISION DISCRETELEMENT::WALL_SURFACE_ENERGY

Definition at line 459 of file discretelement_mod.f.

#### 4.2.1.227 DOUBLE PRECISION DISCRETELEMENT::WALL_VDW_INNER_CUTOFF

Definition at line 456 of file discretelement_mod.f.

#### 4.2.1.228 DOUBLE PRECISION DISCRETELEMENT::WALL_VDW_OUTER_CUTOFF

Definition at line 457 of file discretelement_mod.f.

#### 4.2.1.229 LOGICAL DISCRETELEMENT::WALLDTSPLIT

Definition at line 187 of file discretelement_mod.f.

#### 4.2.1.230 LOGICAL DISCRETELEMENT::WALLREFLECT

Definition at line 188 of file discretelement_mod.f.

#### 4.2.1.231 DOUBLE PRECISION,dimension(:,:,:),pointer DISCRETELEMENT::weightp

Definition at line 327 of file discretelement_mod.f.

Referenced by SET_INITIAL_VELOCITY().

#### 4.2.1.232 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::WELL_DEPTH

Definition at line 379 of file discretelement_mod.f.

#### 4.2.1.233 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::WELL_-WIDTH

Definition at line 378 of file discretelement_mod.f.

#### 4.2.1.234 DOUBLE PRECISION,dimension(:,:,:,:),allocatable DISCRETELEMENT::wtbar

Definition at line 329 of file discretelement_mod.f.

#### 4.2.1.235 DOUBLE PRECISION,dimension(:,:,:,:),allocatable DISCRETELEMENT::wtderivp

Definition at line 329 of file discretelement_mod.f.

#### 4.2.1.236 DOUBLE PRECISION DISCRETELEMENT::WX1

Definition at line 160 of file discretelement_mod.f.

#### 4.2.1.237 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::XE

Definition at line 304 of file discretelement_mod.f.

Referenced by INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.238 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::YN

Definition at line 305 of file discretelement_mod.f.

Referenced by INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

#### 4.2.1.239 DOUBLE PRECISION,dimension(:),allocatable DISCRETELEMENT::ZT

Definition at line 306 of file discretelement_mod.f.

Referenced by INTERPOLATE_QUANTS(), and SET_INITIAL_VELOCITY().

# 4.3 interpolation Module Reference

## Data Types

- interface interpolator

## Functions/Subroutines

- subroutine set_interpolation_stencil (PC, IW, IE, JS, JN, KB, KTP, isch, dimprob, ordernew)
- subroutine interp_oned_scalar (coor, scalar, ppos, interp_scl, order, isch, weight_pointer)
- subroutine set_interpolation_scheme (choice)

## Variables

- INTEGER, parameter prcn = 8
- INTEGER, parameter iprec = 8
- DOUBLE PRECISION, parameter two = 2.0_iprec
- DOUBLE PRECISION, parameter three = 3.0_iprec
- DOUBLE PRECISION, parameter four = 4.0_iprec
- DOUBLE PRECISION, parameter six = 6.0_iprec
- DOUBLE PRECISION, parameter fourth = 0.25_iprec
- INTEGER, parameter maxorder = 6
- DOUBLE PRECISION, dimension(maxorder), target xval
- DOUBLE PRECISION, dimension(maxorder), target yval
- DOUBLE PRECISION, dimension(maxorder), target zval
- DOUBLE PRECISION, dimension(maxorder-1) dx
- DOUBLE PRECISION, dimension(maxorder-1) dy
- DOUBLE PRECISION, dimension(maxorder-1) dz
- DOUBLE PRECISION, dimension(maxorder, maxorder, maxorder), target weights

### 4.3.1 Function/Subroutine Documentation

#### 4.3.1.1 subroutine interpolation::interp_oned_scalar (REAL(prcn),dimension(:),intent(in) *coor*, REAL(prcn),dimension(:),intent(in) *scalar*, REAL(prcn),intent(in) *ppos*, REAL(prcn),intent(out) *interp_scl*, INTEGER,intent(in) *order*, CHARACTER*5,intent(in) *isch*, REAL(prcn),dimension(:),optional,pointer *weight_pointer*)

Definition at line 210 of file interpolation_mod.f.

References dx, dy, dz, four, fourth, six, three, two, weights, xval, yval, and zval.

#### 4.3.1.2 subroutine interpolation::set_interpolation_scheme (INTEGER,intent(in) *choice*)

Definition at line 1903 of file interpolation_mod.f.

#### 4.3.1.3 subroutine interpolation::set_interpolation_stencil (INTEGER,dimension(3),intent(in) *pc*, INTEGER,intent(out) *IW*, INTEGER,intent(out) *IE*, INTEGER,intent(out) *JS*, INTEGER,intent(out) *JN*, INTEGER,intent(out) *KB*, INTEGER,intent(out) *KTP*, CHARACTER*5,intent(in) *isch*, INTEGER,intent(in) *dimprob*, INTEGER,optional *ordernew*)

Definition at line 83 of file interpolation_mod.f.

### 4.3.2 Variable Documentation

#### 4.3.2.1 DOUBLE PRECISION,dimension(maxorder-1) interpolation::dx

Definition at line 75 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.2 DOUBLE PRECISION,dimension(maxorder-1) interpolation::dy

Definition at line 75 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.3 DOUBLE PRECISION,dimension(maxorder-1) interpolation::dz

Definition at line 75 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.4 DOUBLE PRECISION,parameter interpolation::four = 4.0_iprec

Definition at line 67 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.5 DOUBLE PRECISION,parameter interpolation::fourth = 0.25_iprec

Definition at line 71 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.6 INTEGER,parameter interpolation::iprec = 8

Definition at line 62 of file interpolation_mod.f.

#### 4.3.2.7 INTEGER,parameter interpolation::maxorder = 6

Definition at line 73 of file interpolation_mod.f.

#### 4.3.2.8 INTEGER,parameter interpolation::prcn = 8

Definition at line 61 of file interpolation_mod.f.

#### 4.3.2.9 DOUBLE PRECISION,parameter interpolation::six = 6.0_iprec

Definition at line 68 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.10 DOUBLE PRECISION,parameter interpolation::three = 3.0_iprec

Definition at line 66 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.11 DOUBLE PRECISION,parameter interpolation::two = 2.0_iprec

Definition at line 65 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.12 DOUBLE PRECISION,dimension(maxorder,maxorder,maxorder),target interpolation::weights

Definition at line 76 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.13 DOUBLE PRECISION,dimension(maxorder),target interpolation::xval

Definition at line 74 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.14 DOUBLE PRECISION,dimension(maxorder),target interpolation::yval

Definition at line 74 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

#### 4.3.2.15 DOUBLE PRECISION,dimension(maxorder),target interpolation::zval

Definition at line 74 of file interpolation_mod.f.

Referenced by interp_oned_scalar().

## 4.4 randomno Module Reference

### Functions/Subroutines

- subroutine UNI_RNO (Y)
- subroutine NOR_RNO (Y, mean, sigma)

### 4.4.1 Function/Subroutine Documentation

#### 4.4.1.1 subroutine randomno::NOR_RNO (double precision,dimension(:),intent(out) *y*, double precision *mean*, double precision *sigma*)

Definition at line 65 of file randomno_mod.f.

#### 4.4.1.2 subroutine randomno::UNI_RNO (double precision,dimension(:),intent(out) *y*)

Definition at line 24 of file randomno_mod.f.

# Chapter 5

# Data Type Documentation

## 5.1 DES_BC::dmi Type Reference

### Public Attributes

- INTEGER, dimension(:), pointer VALUE

### 5.1.1 Detailed Description

Definition at line 97 of file des_bc_mod.f.

### 5.1.2 Member Data Documentation

#### 5.1.2.1 INTEGER,dimension(:),pointer DES_BC::dmi::VALUE

Definition at line 98 of file des_bc_mod.f.

The documentation for this type was generated from the following file:

- C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/des_bc_mod.f

## 5.2 DISCRETELEMENT::iap1 Type Reference

### Public Attributes

- INTEGER, dimension(:), pointer p

### 5.2.1 Detailed Description

Definition at line 265 of file discretelement_mod.f.

### 5.2.2 Member Data Documentation

#### 5.2.2.1 INTEGER,dimension(:),pointer DISCRETELEMENT::iap1::p

Definition at line 266 of file discretelement_mod.f.

The documentation for this type was generated from the following file:

- C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/discretelement_mod.f

## 5.3 interpolation::interpolator Interface Reference

### 5.3.1 Detailed Description

Definition at line 22 of file interpolation_mod.f.

The documentation for this interface was generated from the following file:

- C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/interpolation_mod.f

# Chapter 6

# File Documentation

## 6.1 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/calc_force_des.f File Reference

### Functions/Subroutines

- subroutine CALC_FORCE_DES

### 6.1.1 Function Documentation

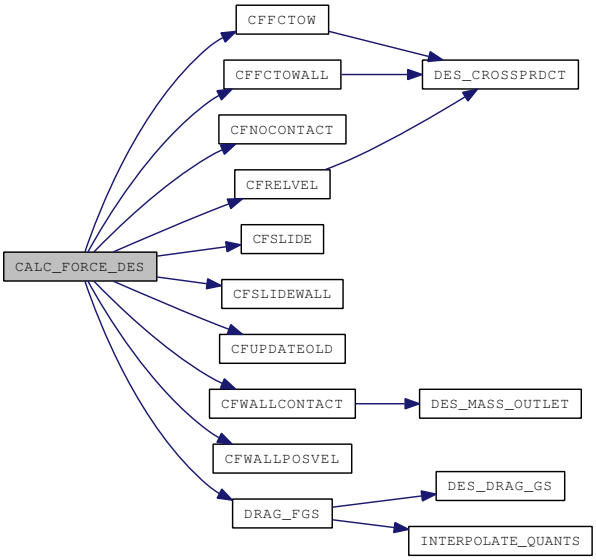
#### 6.1.1.1 subroutine CALC_FORCE_DES ()

Definition at line 14 of file calc_force_des.f.

References CFFCTOW(), CFFCTOWALL(), CFNOCONTACT(), CFRELVEL(), CFSLIDE(), CFSLIDEWALL(), CFUPDATEOLD(), CFWALLCONTACT(), CFWALLPOSVEL(), and DRAG_FGS().

Referenced by DES_TIME_MARCH().

Here is the call graph for this function:




Here is the caller graph for this function:

# 6.2 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/cell_near_wall.f File Reference

## Functions/Subroutines

- subroutine CELL_NEAR_WALL

  *Purpose: FIND THE CELLS THAT IN THE NEIGHBORHOOD OF WALLS OR INTERNAL SURFACES.*

## 6.2.1 Function Documentation

### 6.2.1.1 subroutine CELL_NEAR_WALL ()

Purpose: FIND THE CELLS THAT IN THE NEIGHBORHOOD OF WALLS OR INTERNAL SURFACES.

Definition at line 32 of file cell_near_wall.f.

# 6.3 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfassign.f File Reference

## Functions/Subroutines

- subroutine CFASSIGN

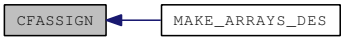
## 6.3.1 Function Documentation

### 6.3.1.1 subroutine CFASSIGN ()

Definition at line 19 of file cfassign.f.

Referenced by MAKE_ARRAYS_DES().

Here is the caller graph for this function:



# 6.4 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cffctow.f File Reference

## Functions/Subroutines

- subroutine CFFCTOW (L, II, NORM, DIST_LI)

## 6.4.1 Function Documentation

### 6.4.1.1 subroutine CFFCTOW (INTEGER *L*, INTEGER *II*, DOUBLE PRECISION,dimension(dimn) *NORM*, DOUBLE PRECISION *DIST_LI*)

Definition at line 20 of file cffctow.f.

References DES_CROSSPRDCT().

Referenced by CALC_FORCE_DES().

Here is the call graph for this function:


Here is the caller graph for this function:

# 6.5 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cffctowall.f File Reference

## Functions/Subroutines

- subroutine CFFCTOWALL (L, NORM, DIST_LI)

### 6.5.1 Function Documentation

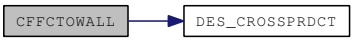
#### 6.5.1.1 subroutine CFFCTOWALL (INTEGER *L*, DOUBLE PRECISION,dimension(dimn) *NORM*, DOUBLE PRECISION *DIST_LI*)

Definition at line 15 of file cffctowall.f.

References DES_CROSSPRDCT().

Referenced by CALC_FORCE_DES().

Here is the call graph for this function:




Here is the caller graph for this function:

# 6.6 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfnewvalues.f File Reference

## Functions/Subroutines

- subroutine CFNEWVALUES (L)

## 6.6.1 Function Documentation

### 6.6.1.1 subroutine CFNEWVALUES (INTEGER *L*)

Definition at line 20 of file cfnewvalues.f.

Referenced by DES_TIME_MARCH().

Here is the caller graph for this function:

# 6.7 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfnocontact.f File Reference

## Functions/Subroutines

- subroutine CFNOCONTACT (L)

  *Purpose: DES - Zeroing values when particles are not in contact.*

## 6.7.1 Function Documentation

### 6.7.1.1 subroutine CFNOCONTACT (INTEGER *L*)

Purpose: DES - Zeroing values when particles are not in contact.

Definition at line 13 of file cfnocontact.f.

Referenced by CALC_FORCE_DES().

Here is the caller graph for this function:

# 6.8 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfrelvel.f File Reference

## Functions/Subroutines

- subroutine CFRELVEL (L, II, VRN, VRT, TANGNT, NORM, DIST_LI, WALLCONTACT)

## 6.8.1 Function Documentation

### 6.8.1.1 subroutine CFRELVEL (INTEGER *L*, INTEGER *II*, DOUBLE PRECISION *VRN*, DOUBLE PRECISION *VRT*, DOUBLE PRECISION,dimension(dimn) *TANGNT*, DOUBLE PRECISION,dimension(dimn) *NORM*, DOUBLE PRECISION *DIST_LI*, INTEGER *WALLCONTACT*)

Definition at line 24 of file cfrelvel.f.

References DES_CROSSPRDCT().

Referenced by CALC_FORCE_DES().

Here is the call graph for this function:


Here is the caller graph for this function:

# 6.9 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfslide.f File Reference

## Functions/Subroutines

- subroutine CFSLIDE (L, TANGNT, TMP_FT)

## 6.9.1 Function Documentation

### 6.9.1.1 subroutine CFSLIDE (INTEGER *L*, DOUBLE PRECISION,dimension(dimn) *TANGNT*, DOUBLE PRECISION,dimension(dimn) *TMP_FT*)

Definition at line 16 of file cfslide.f.

Referenced by CALC_FORCE_DES().

Here is the caller graph for this function:

# 6.10 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfslidewall.f File Reference

## Functions/Subroutines

- subroutine CFSLIDEWALL (L, TANGNT, TMP_FT)

  *Purpose: DES - Calculate slide between particles and walls.*

## 6.10.1 Function Documentation

### 6.10.1.1 subroutine CFSLIDEWALL (INTEGER *L*, DOUBLE PRECISION,dimension(dimn) *TANGNT*, DOUBLE PRECISION,dimension(dimn) *TMP_FT*)

Purpose: DES - Calculate slide between particles and walls.

Definition at line 14 of file cfslidewall.f.

Referenced by CALC_FORCE_DES().

Here is the caller graph for this function:

# 6.11 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfupdateold.f File Reference

## Functions/Subroutines

- subroutine CFUPDATEOLD

## 6.11.1 Function Documentation

### 6.11.1.1 subroutine CFUPDATEOLD ()

Definition at line 13 of file cfupdateold.f.

Referenced by CALC_FORCE_DES().

Here is the caller graph for this function:

# 6.12 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfwallcontact.f File Reference

## Functions/Subroutines

- subroutine CFWALLCONTACT (WALL, L, WALLCONTACTI)
- subroutine DES_MASS_OUTLET (NP, BCC, WC)

## 6.12.1 Function Documentation

### 6.12.1.1 subroutine CFWALLCONTACT (INTEGER *WALL*, INTEGER *L*, INTEGER *WALLCONTACTI*)

Definition at line 12 of file cfwallcontact.f.

References DES_MASS_OUTLET().

Referenced by CALC_FORCE_DES().

Here is the call graph for this function:


Here is the caller graph for this function:


### 6.12.1.2 subroutine DES_MASS_OUTLET (INTEGER *NP*, CHARACTER∗3 *BCC*, INTEGER *WC*)

Definition at line 131 of file cfwallcontact.f.

Referenced by CFWALLCONTACT().

Here is the caller graph for this function:

# 6.13 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/cfwallposvel.f File Reference

## Functions/Subroutines

- subroutine CFWALLPOSVEL (L, IW)

## 6.13.1 Function Documentation

### 6.13.1.1 subroutine CFWALLPOSVEL (INTEGER *L*, INTEGER *IW*)

Definition at line 12 of file cfwallposvel.f.

Referenced by CALC_FORCE_DES().

Here is the caller graph for this function:

# 6.14 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/check_des_bc.f File Reference

## Functions/Subroutines

- subroutine CHECK_DES_BC
- subroutine DES_CHECK_MIO_LOCATION (BCV)
- subroutine ALLOCATE_DES_MIO (BC_MI, BC_MO)
- subroutine DES_MI_CLASSIFY (BCV_I, BCV)
- subroutine DES_MI_LAYOUT (LEN1, LEN2, BC_VEL, BCV_I, BCV)
- subroutine DES_MI_CELLS (BCV, BCV_I)
- subroutine DES_MO_CLASSIFY (BCV_I, BCV)

## 6.14.1 Function Documentation

### 6.14.1.1 subroutine ALLOCATE_DES_MIO (INTEGER *BC_MI*, INTEGER *BC_MO*)

Definition at line 592 of file check_des_bc.f.

Referenced by CHECK_DES_BC().

Here is the caller graph for this function:

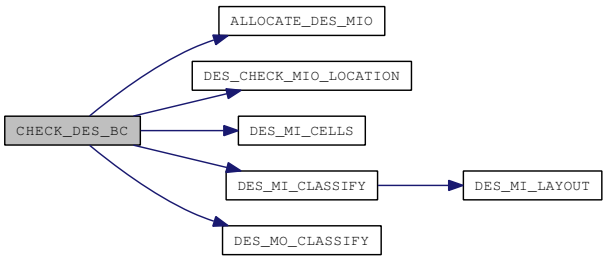

### 6.14.1.2 subroutine CHECK_DES_BC ()

Definition at line 17 of file check_des_bc.f.

References ALLOCATE_DES_MIO(), DES_CHECK_MIO_LOCATION(), DES_MI_CELLS(), DES_-MI_CLASSIFY(), and DES_MO_CLASSIFY().

Referenced by MAKE_ARRAYS_DES().

Here is the call graph for this function:




Here is the caller graph for this function:

#### 6.14.1.3 subroutine DES_CHECK_MIO_LOCATION (INTEGER *BCV*)

Definition at line 372 of file check_des_bc.f.

Referenced by CHECK_DES_BC().

Here is the caller graph for this function:


#### 6.14.1.4 subroutine DES_MI_CELLS (INTEGER *BCV*, INTEGER *BCV_I*)

Definition at line 1299 of file check_des_bc.f.

Referenced by CHECK_DES_BC().

Here is the caller graph for this function:


#### 6.14.1.5 subroutine DES_MI_CLASSIFY (INTEGER *BCV_I*, INTEGER *BCV*)

Definition at line 674 of file check_des_bc.f.

References DES_MI_LAYOUT().

Referenced by CHECK_DES_BC().

Here is the call graph for this function:


Here is the caller graph for this function:


#### 6.14.1.6 subroutine DES_MI_LAYOUT (DOUBLE PRECISION *LEN1*, DOUBLE PRECISION *LEN2*, DOUBLE PRECISION *BC_VEL*, INTEGER *BCV_I*, INTEGER *BCV*)

Definition at line 1057 of file check_des_bc.f.

Referenced by DES_MI_CLASSIFY().

Here is the caller graph for this function:

#### 6.14.1.7 subroutine DES_MO_CLASSIFY (INTEGER *BCV_I*, INTEGER *BCV*)

Definition at line 1399 of file check_des_bc.f.

Referenced by CHECK_DES_BC().

Here is the caller graph for this function:

## 6.15 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/check_des_data.f File Reference

### Functions/Subroutines

- subroutine CHECK_DES_DATA

### 6.15.1 Function Documentation

#### 6.15.1.1 subroutine CHECK_DES_DATA ()

Definition at line 13 of file check_des_data.f.

# 6.16 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/des_allocate_arrays.f File Reference

## Functions/Subroutines

- subroutine DES_ALLOCATE_ARRAYS

## 6.16.1 Function Documentation

### 6.16.1.1 subroutine DES_ALLOCATE_ARRAYS ()

Definition at line 8 of file des_allocate_arrays.f.

## 6.17 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/des_bc_mod.f File Reference

### Data Types

- type DES_BC::dmi

### Modules

- module DES_BC

### Variables

- LOGICAL DES_BC::DES_MI
- LOGICAL DES_BC::DES_MO_X
- LOGICAL DES_BC::DES_MO_Y
- LOGICAL DES_BC::DES_MO_Z
- DOUBLE PRECISION DES_BC::DES_BC_X_w
- DOUBLE PRECISION DES_BC::DES_BC_X_e
- DOUBLE PRECISION DES_BC::DES_BC_Y_s
- DOUBLE PRECISION DES_BC::DES_BC_Y_n
- DOUBLE PRECISION DES_BC::DES_BC_Z_b
- DOUBLE PRECISION DES_BC::DES_BC_Z_t
- DOUBLE PRECISION DES_BC::DES_BC_VOLFLOW_s
- DOUBLE PRECISION DES_BC::DES_BC_MASSFLOW_s
- CHARACTER ∗16 DES_BC::DES_BC_TYPE
- DOUBLE PRECISION DES_BC::DES_BC_U_s
- DOUBLE PRECISION DES_BC::DES_BC_V_s
- DOUBLE PRECISION DES_BC::DES_BC_W_s
- DOUBLE PRECISION DES_BC::DES_BC_Uw_s
- DOUBLE PRECISION DES_BC::DES_BC_Vw_s
- DOUBLE PRECISION DES_BC::DES_BC_Ww_s
- INTEGER, dimension(:), allocatable DES_BC::DES_BC_MI_ID
- INTEGER, dimension(:), allocatable DES_BC::DES_BC_MO_ID
- CHARACTER ∗4, dimension(:), allocatable DES_BC::DES_MI_CLASS
- CHARACTER ∗3, dimension(:), allocatable DES_BC::DES_MO_CLASS
- CHARACTER ∗4, dimension(:), allocatable DES_BC::PARTICLE_PLCMNT
- INTEGER, dimension(:), allocatable DES_BC::PI_FACTOR
- INTEGER, dimension(:), allocatable DES_BC::PI_COUNT
- DOUBLE PRECISION, dimension(:), allocatable DES_BC::DES_MI_TIME
- INTEGER, dimension(:), allocatable DES_BC::MI_FACTOR
- DOUBLE PRECISION, dimension(:), allocatable DES_BC::MI_WINDOW
- TYPE(dmi), dimension(:), allocatable DES_BC::I_OF_MI
- TYPE(dmi), dimension(:), allocatable DES_BC::J_OF_MI
- TYPE(dmi), dimension(:), allocatable DES_BC::MI_ORDER
- INTEGER, dimension(:,:), allocatable DES_BC::GS_ARRAY

# 6.18 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/des_check_particle.f File Reference

## Functions/Subroutines

- subroutine DES_CHECK_PARTICLE

## 6.18.1 Function Documentation

### 6.18.1.1 subroutine DES_CHECK_PARTICLE ()

Definition at line 17 of file des_check_particle.f.

Referenced by DES_TIME_MARCH().

Here is the caller graph for this function:

# 6.19 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/des_functions.f File Reference

## Functions/Subroutines

- DOUBLE PRECISION DES_DOTPRDCT (XX, YY)
- subroutine DES_CROSSPRDCT (AA, XX, YY)

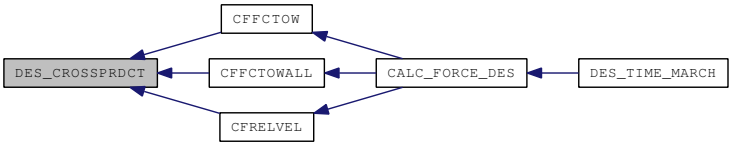
## 6.19.1 Function Documentation

### 6.19.1.1 subroutine DES_CROSSPRDCT (DOUBLE PRECISION,dimension(dimn) *AA*, DOUBLE PRECISION,dimension(dimn) *XX*, DOUBLE PRECISION,dimension(dimn) *YY*)

Definition at line 39 of file des_functions.f.

Referenced by CFFCTOW(), CFFCTOWALL(), and CFRELVEL().

Here is the caller graph for this function:




### 6.19.1.2 DOUBLE PRECISION DES_DOTPRDCT (DOUBLE PRECISION,dimension(dimn) *XX*, DOUBLE PRECISION,dimension(dimn) *YY*)

Definition at line 8 of file des_functions.f.

# 6.20 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/des_granular_temperature.f File Reference

## Functions/Subroutines

- subroutine DES_GRANULAR_TEMPERATURE

## 6.20.1 Function Documentation

### 6.20.1.1 subroutine DES_GRANULAR_TEMPERATURE ()

Definition at line 12 of file des_granular_temperature.f.

Referenced by DES_TIME_MARCH().

Here is the caller graph for this function:

# 6.21 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/des_init_arrays.f File Reference

## Functions/Subroutines

- subroutine DES_INIT_ARRAYS

  *Purpose: DES - initialize the des-namelist.*

## 6.21.1 Function Documentation

### 6.21.1.1 subroutine DES_INIT_ARRAYS ()

Purpose: DES - initialize the des-namelist.

Definition at line 12 of file des_init_arrays.f.

# 6.22 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/des_init_namelist.f File Reference

## Functions/Subroutines

- subroutine DES_INIT_NAMELIST

## 6.22.1 Function Documentation

### 6.22.1.1 subroutine DES_INIT_NAMELIST ()

Definition at line 12 of file des_init_namelist.f.

References DES_BC::DES_BC_MASSFLOW_s, DES_BC::DES_BC_TYPE, DES_BC::DES_BC_U_s, DES_BC::DES_BC_Uw_s, DES_BC::DES_BC_V_s, DES_BC::DES_BC_VOLFLOW_s, DES_BC::DES_BC_Vw_s, DES_BC::DES_BC_W_s, DES_BC::DES_BC_Ww_s, DES_BC::DES_BC_X_e, DES_BC::DES_BC_X_w, DES_BC::DES_BC_Y_n, DES_BC::DES_BC_Y_s, DES_BC::DES_BC_Z_b, and DES_BC::DES_BC_Z_t.

# 6.23 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/des_mass_inlet.f File Reference

## Functions/Subroutines

- subroutine DES_MASS_INLET (BCV_I)
- subroutine DES_PLACE_NEW_PARTICLE (NP, BCV_I)
- subroutine DES_NEW_PARTICLE_TEST (NP, TOUCHING, BCV_I)

## 6.23.1 Function Documentation

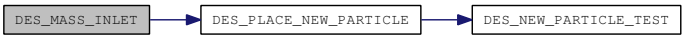
### 6.23.1.1 subroutine DES_MASS_INLET (INTEGER *BCV_I*)

Definition at line 15 of file des_mass_inlet.f.

References DES_BC::DES_BC_MI_ID, DES_BC::DES_BC_U_s, DES_BC::DES_BC_V_s, DES_BC::DES_BC_W_s, DES_PLACE_NEW_PARTICLE(), DES_BC::GS_ARRAY, and DES_BC::PI_COUNT.

Referenced by DES_TIME_MARCH().

Here is the call graph for this function:




Here is the caller graph for this function:


### 6.23.1.2 subroutine DES_NEW_PARTICLE_TEST (INTEGER *NP*, LOGICAL *TOUCHING*, INTEGER *BCV_I*)

Definition at line 699 of file des_mass_inlet.f.

References DES_BC::GS_ARRAY.

Referenced by DES_PLACE_NEW_PARTICLE().

Here is the caller graph for this function:


### 6.23.1.3 subroutine DES_PLACE_NEW_PARTICLE (INTEGER *NP*, INTEGER *BCV_I*)

Definition at line 220 of file des_mass_inlet.f.

References DES_BC::DES_BC_MI_ID, DES_BC::DES_BC_X_e, DES_BC::DES_BC_X_w, DES_BC::DES_BC_Y_n, DES_BC::DES_BC_Y_s, DES_BC::DES_BC_Z_b, DES_BC::DES_BC_Z_t,

DES_BC::DES_MI_CLASS, DES_NEW_PARTICLE_TEST(), DES_BC::I_OF_MI, DES_BC::J_OF_MI, DES_BC::MI_FACTOR, DES_BC::MI_ORDER, DES_BC::MI_WINDOW, and DES_BC::PARTICLE_PLCMNT.

Referenced by DES_MASS_INLET().

Here is the call graph for this function:


Here is the caller graph for this function:

# 6.24 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/des_time_march.f File Reference

## Functions/Subroutines

- subroutine DES_TIME_MARCH

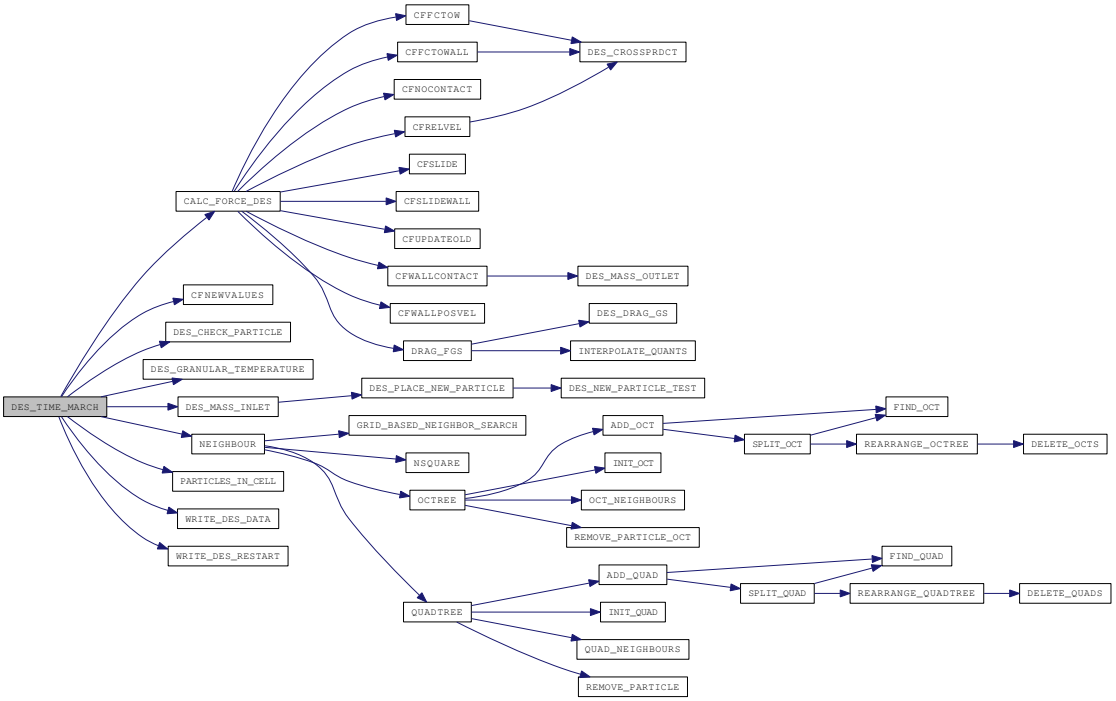
## 6.24.1 Function Documentation

### 6.24.1.1 subroutine DES_TIME_MARCH ()

Definition at line 16 of file des_time_march.f.

References CALC_FORCE_DES(), CFNEWVALUES(), DES_BC::DES_BC_MI_ID, DES_CHECK_PARTICLE(), DES_GRANULAR_TEMPERATURE(), DES_MASS_INLET(), DES_BC::DES_MI, DES_BC::DES_MI_TIME, NEIGHBOUR(), PARTICLES_IN_CELL(), DES_BC::PI_FACTOR, WRITE_DES_DATA(), and WRITE_DES_RESTART().

Here is the call graph for this function:



## 6.25 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/desnamelist.inc File Reference

## 6.26 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/discretelement_mod.f File Reference

### Data Types

- type DISCRETELEMENT::iap1

### Modules

- module DISCRETELEMENT

### Variables

- LOGICAL DISCRETELEMENT::PRINT_DES_DATA
- DOUBLE PRECISION DISCRETELEMENT::DES_SPX_DT
- DOUBLE PRECISION DISCRETELEMENT::DES_RES_DT
- LOGICAL DISCRETELEMENT::DEM_OUTPUT_DATA_TECPLOT
- LOGICAL DISCRETELEMENT::DEBUG_DES
- INTEGER DISCRETELEMENT::FOCUS_PARTICLE
- INTEGER DISCRETELEMENT::IFI
- INTEGER, parameter DISCRETELEMENT::DES_EXTRA_UNIT = 2000
- INTEGER, parameter DISCRETELEMENT::DES_VOLFRAC_UNIT = 2001
- INTEGER DISCRETELEMENT::PARTICLES
- DOUBLE PRECISION DISCRETELEMENT::PARTICLES_FACTOR
- LOGICAL DISCRETELEMENT::DISCRETE_ELEMENT
- LOGICAL DISCRETELEMENT::DES_CONTINUUM_COUPLED
- INTEGER DISCRETELEMENT::NFACTOR
- LOGICAL DISCRETELEMENT::DES_INTERP_ON
- LOGICAL DISCRETELEMENT::TSUJI_DRAG
- CHARACTER(64) DISCRETELEMENT::DES_INTG_METHOD
- DOUBLE PRECISION DISCRETELEMENT::KN
- DOUBLE PRECISION DISCRETELEMENT::KN_W
- DOUBLE PRECISION DISCRETELEMENT::KT
- DOUBLE PRECISION DISCRETELEMENT::KT_W
- DOUBLE PRECISION DISCRETELEMENT::KT_FAC
- DOUBLE PRECISION DISCRETELEMENT::KT_W_FAC
- DOUBLE PRECISION DISCRETELEMENT::ETA_DES_N
- DOUBLE PRECISION DISCRETELEMENT::ETA_N_W
- DOUBLE PRECISION DISCRETELEMENT::ETA_DES_T
- DOUBLE PRECISION DISCRETELEMENT::ETA_T_W
- DOUBLE PRECISION DISCRETELEMENT::DES_ETAT_FAC
- DOUBLE PRECISION DISCRETELEMENT::DES_ETAT_W_FAC
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_ETAN
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_ETAT
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::DES_ETAN_WALL
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::DES_ETAT_WALL
- DOUBLE PRECISION DISCRETELEMENT::MEW
- DOUBLE PRECISION DISCRETELEMENT::MEW_W
- DOUBLE PRECISION DISCRETELEMENT::DES_EN_INPUT

- DOUBLE PRECISION DISCRETELEMENT::DES_ET_INPUT
- DOUBLE PRECISION DISCRETELEMENT::DES_EN_WALL_INPUT
- DOUBLE PRECISION DISCRETELEMENT::DES_ET_WALL_INPUT
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::REAL_EN
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::REAL_ET
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::REAL_EN_WALL
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::REAL_ET_WALL
- CHARACTER(64) DISCRETELEMENT::DES_COLL_MODEL
- double precision DISCRETELEMENT::ew_young
- double precision DISCRETELEMENT::vw_poisson
- double precision, dimension(dim_m) DISCRETELEMENT::e_young
- double precision, dimension(dim_m) DISCRETELEMENT::v_poisson
- double precision, dimension(:,:), allocatable DISCRETELEMENT::hert_kn
- double precision, dimension(:,:), allocatable DISCRETELEMENT::hert_kt
- double precision, dimension(:), allocatable DISCRETELEMENT::hert_kwn
- double precision, dimension(:), allocatable DISCRETELEMENT::hert_kwt
- double precision, dimension(:), allocatable DISCRETELEMENT::g_mod
- LOGICAL DISCRETELEMENT::PARTICLE_SLIDE
- DOUBLE PRECISION DISCRETELEMENT::DTSOLID
- DOUBLE PRECISION DISCRETELEMENT::DTSOLID_FACTOR
- DOUBLE PRECISION DISCRETELEMENT::S_TIME
- INTEGER DISCRETELEMENT::DES_NEIGHBOR_SEARCH
- INTEGER DISCRETELEMENT::NEIGH_MAX
- DOUBLE PRECISION DISCRETELEMENT::OVERLAP_MAX
- INTEGER DISCRETELEMENT::QLM
- INTEGER DISCRETELEMENT::QLN
- INTEGER DISCRETELEMENT::INIT_QUAD_COUNT
- INTEGER DISCRETELEMENT::INQC
- INTEGER DISCRETELEMENT::NQUAD
- INTEGER DISCRETELEMENT::MAXQUADS
- INTEGER DISCRETELEMENT::NMQD
- DOUBLE PRECISION DISCRETELEMENT::N2CT
- DOUBLE PRECISION DISCRETELEMENT::QUADCT
- DOUBLE PRECISION DISCRETELEMENT::OCTCT
- DOUBLE PRECISION DISCRETELEMENT::MQUAD_FACTOR
- DOUBLE PRECISION DISCRETELEMENT::RADIUS_EQ
- INTEGER DISCRETELEMENT::NEIGHBOR_SEARCH_N
- DOUBLE PRECISION DISCRETELEMENT::NEIGHBOR_SEARCH_RAD_RATIO
- LOGICAL DISCRETELEMENT::DO_NSEARCH
- DOUBLE PRECISION DISCRETELEMENT::FACTOR_RLM
- INTEGER DISCRETELEMENT::MN
- INTEGER DISCRETELEMENT::MAXNEIGHBORS
- INTEGER DISCRETELEMENT::DIMN
- INTEGER DISCRETELEMENT::NWALLS
- DOUBLE PRECISION DISCRETELEMENT::WX1
- DOUBLE PRECISION DISCRETELEMENT::EX2
- DOUBLE PRECISION DISCRETELEMENT::BY1
- DOUBLE PRECISION DISCRETELEMENT::TY2
- DOUBLE PRECISION DISCRETELEMENT::SZ1
- DOUBLE PRECISION DISCRETELEMENT::NZ2

- LOGICAL DISCRETELEMENT::GENER_PART_CONFIG
- DOUBLE PRECISION DISCRETELEMENT::VOL_FRAC
- DOUBLE PRECISION DISCRETELEMENT::DES_EPS_XSTART
- DOUBLE PRECISION DISCRETELEMENT::DES_EPS_YSTART
- DOUBLE PRECISION DISCRETELEMENT::DES_EPS_ZSTART
- INTEGER DISCRETELEMENT::PART_MPHASE
- DOUBLE PRECISION DISCRETELEMENT::pvel_mean
- DOUBLE PRECISION DISCRETELEMENT::PVEL_StDev
- DOUBLE PRECISION DISCRETELEMENT::DES_GAMMA
- DOUBLE PRECISION DISCRETELEMENT::DES_F
- DOUBLE PRECISION DISCRETELEMENT::LID_VEL
- LOGICAL DISCRETELEMENT::WALLDTSPLIT
- LOGICAL DISCRETELEMENT::WALLREFLECT
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::c_near_w
- LOGICAL DISCRETELEMENT::NON_RECT_BC
- LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS
- LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS_X
- LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS_Y
- LOGICAL DISCRETELEMENT::DES_PERIODIC_WALLS_Z
- DOUBLE PRECISION, dimension(3) DISCRETELEMENT::pgrad
- DOUBLE PRECISION DISCRETELEMENT::MIN_RADIUS
- DOUBLE PRECISION DISCRETELEMENT::MAX_RADIUS
- INTEGER, dimension(:), allocatable DISCRETELEMENT::MARK_PART
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::bed_height
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::DES_RADIUS
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::RO_Sol
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::PVOL
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::PMASS
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::OMOI
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_POS_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_POS_NEW
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_VEL_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_VEL_NEW
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::OMEGA_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::OMEGA_NEW
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::PPOS
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_VEL_OOLD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_ACC_OLD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::ROT_ACC_OLD
- LOGICAL DISCRETELEMENT::CALC_FC
- LOGICAL DISCRETELEMENT::CALLFROMDES
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::FC
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::FN
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::FT
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::GRAV
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::TOW
- DOUBLE PRECISION, dimension(:,:,:), allocatable DISCRETELEMENT::PFT
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::PN
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::PV
- DOUBLE PRECISION, dimension(:,:,:), allocatable DISCRETELEMENT::SOLID_DRAG

- TYPE(iap1), dimension(:,:,:), allocatable DISCRETELEMENT::pic
- INTEGER, dimension(:), allocatable DISCRETELEMENT::PINC
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::PIJK
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::NEIGHBOURS
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::LQUAD
- INTEGER, dimension(:), allocatable DISCRETELEMENT::PQUAD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::CQUAD
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_U_s
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_V_s
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_W_s
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::DES_VEL_AVG
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_THETA
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::GLOBAL_GRAN_ENERGY
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::GLOBAL_GRAN_TEMP
- DOUBLE PRECISION DISCRETELEMENT::DES_KE
- DOUBLE PRECISION DISCRETELEMENT::DES_PE
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::XE
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::YN
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::ZT
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_WALL_POS
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::DES_WALL_VEL
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::WALL_NORMAL
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable DISCRETELEMENT::drag_am
- DOUBLE PRECISION, dimension(:,:,:,:,:), allocatable DISCRETELEMENT::drag_bm
- DOUBLE PRECISION, dimension(:,:), allocatable DISCRETELEMENT::vel_fp
- DOUBLE PRECISION, dimension(:,:,:), pointer DISCRETELEMENT::weightp
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::f_gp
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable DISCRETELEMENT::wtderivp
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable DISCRETELEMENT::wtbar
- DOUBLE PRECISION, dimension(:,:,:), allocatable DISCRETELEMENT::sstencil
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable DISCRETELEMENT::gstencil
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable DISCRETELEMENT::vstencil
- DOUBLE PRECISION, dimension(:,:,:,:), allocatable DISCRETELEMENT::pgradstencil
- CHARACTER(LEN=7) DISCRETELEMENT::scheme
- CHARACTER(LEN=7) DISCRETELEMENT::interp_scheme
- INTEGER DISCRETELEMENT::order
- INTEGER DISCRETELEMENT::ob2l
- INTEGER DISCRETELEMENT::ob2r
- LOGICAL, dimension(:,:), allocatable DISCRETELEMENT::PEA
- INTEGER DISCRETELEMENT::PIS
- INTEGER DISCRETELEMENT::MAX_PIS
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::WELL_WIDTH
- DOUBLE PRECISION, dimension(:), allocatable DISCRETELEMENT::WELL_DEPTH
- DOUBLE PRECISION DISCRETELEMENT::MASTER_WELL_DEPTH
- DOUBLE PRECISION DISCRETELEMENT::MASTER_WALL_WELL_DEPTH
- DOUBLE PRECISION DISCRETELEMENT::RADIUS_RATIO
- DOUBLE PRECISION DISCRETELEMENT::WALL_RADIUS_RATIO
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::LINKS
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::AGGS

- INTEGER, dimension(:), allocatable DISCRETELEMENT::IS_LINKED
- LOGICAL DISCRETELEMENT::USE_COHESION
- LOGICAL DISCRETELEMENT::SQUARE_WELL
- INTEGER DISCRETELEMENT::COHESION_DEBUG
- INTEGER DISCRETELEMENT::COHESION_DEBUG_START
- INTEGER DISCRETELEMENT::COH_DEBUG_PARTICLE
- INTEGER DISCRETELEMENT::COH_DEBUG_STEP
- INTEGER DISCRETELEMENT::LAST_COLLISION
- INTEGER DISCRETELEMENT::ANIMATION_WRITE_INTERVAL
- INTEGER DISCRETELEMENT::ANIMATION_WRITE_COUNTER
- DOUBLE PRECISION DISCRETELEMENT::TIME_FACTOR
- INTEGER DISCRETELEMENT::MAX_ANIMATOR_STEP
- INTEGER DISCRETELEMENT::MIN_ANIMATOR_STEP
- INTEGER DISCRETELEMENT::MAX_LOG_STEP
- INTEGER DISCRETELEMENT::MIN_LOG_STEP
- INTEGER, dimension(:), allocatable DISCRETELEMENT::IS_AGGLOMERATED
- INTEGER DISCRETELEMENT::SEARCH_GRIDS
- INTEGER DISCRETELEMENT::PART_IN_GRID
- INTEGER, dimension(:,:), allocatable DISCRETELEMENT::PART_GRID
- INTEGER DISCRETELEMENT::MAX_PART_IN_GRID
- DOUBLE PRECISION DISCRETELEMENT::SEARCH_GRID_SIZE
- LOGICAL DISCRETELEMENT::USE_COL_MW
- LOGICAL DISCRETELEMENT::VAN_DER_WAALS
- DOUBLE PRECISION DISCRETELEMENT::HAMAKER_CONSTANT
- DOUBLE PRECISION DISCRETELEMENT::VDW_INNER_CUTOFF
- DOUBLE PRECISION DISCRETELEMENT::VDW_OUTER_CUTOFF
- DOUBLE PRECISION DISCRETELEMENT::WALL_HAMAKER_CONSTANT
- DOUBLE PRECISION DISCRETELEMENT::WALL_VDW_INNER_CUTOFF
- DOUBLE PRECISION DISCRETELEMENT::WALL_VDW_OUTER_CUTOFF
- DOUBLE PRECISION DISCRETELEMENT::SURFACE_ENERGY
- DOUBLE PRECISION DISCRETELEMENT::WALL_SURFACE_ENERGY
- LOGICAL DISCRETELEMENT::RHODES_COHESION
- DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_FACTOR
- DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_FACTOR_WALL
- DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_LENGTH_SCALE
- DOUBLE PRECISION DISCRETELEMENT::RHODES_COHESION_LENGTH_SCALE_WALL
- LOGICAL DISCRETELEMENT::RECORD_NET_FORCES
- INTEGER DISCRETELEMENT::VERTICAL_NET_FORCE_BINS
- DOUBLE PRECISION DISCRETELEMENT::NET_FORCE_COUNTER
- DOUBLE PRECISION DISCRETELEMENT::VERTICAL_NET_FORCE_INCREMENT
- DOUBLE PRECISION DISCRETELEMENT::NET_FORCE_TIME_INCREMENT
- DOUBLE PRECISION DISCRETELEMENT::TIME_AT_PREVIOUS_NET_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_PART_TAN_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_WALL_TAN_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_PART_NORM_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_WALL_NORM_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_GRAVITY_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_PART_COH_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_WALL_COH_FORCE
- DOUBLE PRECISION DISCRETELEMENT::NET_FLUID_DRAG_FORCE

- DOUBLE PRECISION DISCRETELEMENT::NET_PRESSURE_FORCE
- INTEGER DISCRETELEMENT::APP_COH_DIST_INT
- INTEGER DISCRETELEMENT::CAP_COH_DIST_INT
- INTEGER DISCRETELEMENT::ESC_COH_DIST_INT

# 6.27 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/drag_fgs.f File Reference

## Functions/Subroutines

- subroutine DRAG_FGS
- subroutine INTERPOLATE_QUANTS (IW, IE, JS, JN, KB, KTP, ONEW, POSP, FVEL, FOCUS)
- subroutine DES_DRAG_GS (KK, fvel, des_vel)

## 6.27.1 Function Documentation

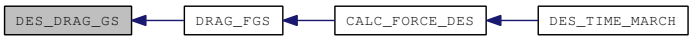
### 6.27.1.1 subroutine DES_DRAG_GS (INTEGER,intent(in) *KK*, DOUBLE PRECISION,dimension(dimn),intent(in) *fvel*, DOUBLE PRECISION,dimension(dimn),intent(in) *des_vel*)

Definition at line 747 of file drag_fgs.f.

References DISCRETELEMENT::DES_RADIUS, DISCRETELEMENT::DIMN, DISCRETELEMENT::PIJK, DISCRETELEMENT::PVOL, and DISCRETELEMENT::TSUJI_DRAG.

Referenced by DRAG_FGS().

Here is the caller graph for this function:



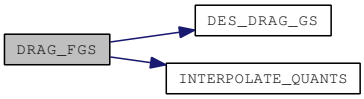

### 6.27.1.2 subroutine DRAG_FGS ()

Definition at line 19 of file drag_fgs.f.

References DISCRETELEMENT::CALC_FC, DISCRETELEMENT::CALLFROMDES, DES_DRAG_GS(), DISCRETELEMENT::DES_INTERP_ON, DISCRETELEMENT::DES_PERIODIC_WALLS, DISCRETELEMENT::DES_PERIODIC_WALLS_X, DISCRETELEMENT::DES_PERIODIC_WALLS_Y, DISCRETELEMENT::DES_PERIODIC_WALLS_Z, DISCRETELEMENT::DES_POS_NEW, DISCRETELEMENT::DES_VEL_NEW, DISCRETELEMENT::drag_am, DISCRETELEMENT::drag_bm, DISCRETELEMENT::FC, DISCRETELEMENT::FOCUS_PARTICLE, INTERPOLATE_QUANTS(), DISCRETELEMENT::MAX_PIS, DISCRETELEMENT::PEA, DISCRETELEMENT::PIJK, DISCRETELEMENT::PINC, DISCRETELEMENT::PIS, DISCRETELEMENT::PVOL, DISCRETELEMENT::SOLID_DRAG, and DISCRETELEMENT::vstencil.

Referenced by CALC_FORCE_DES().

Here is the call graph for this function:



Here is the caller graph for this function:

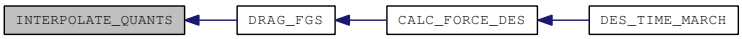

#### 6.27.1.3 subroutine INTERPOLATE_QUANTS (INTEGER,intent(in) *IW*, INTEGER,intent(in) *IE*, INTEGER,intent(in) *JS*, INTEGER,intent(in) *JN*, INTEGER,intent(in) *KB*, INTEGER,intent(in) *KTP*, INTEGER,intent(in) *onew*, DOUBLE PRECISION,dimension(dimn),intent(in) *POSP*, DOUBLE PRECISION,dimension(dimn),intent(out) *FVEL*, LOGICAL *FOCUS*)

Definition at line 575 of file drag_fgs.f.

References DISCRETELEMENT::DES_PERIODIC_WALLS, DISCRETELEMENT::DES_PERIODIC_-WALLS_X, DISCRETELEMENT::DES_PERIODIC_WALLS_Y, DISCRETELEMENT::DES_-PERIODIC_WALLS_Z, DISCRETELEMENT::DIMN, DISCRETELEMENT::vstencil, DISCRETELE-MENT::XE, DISCRETELEMENT::YN, and DISCRETELEMENT::ZT.

Referenced by DRAG_FGS().

Here is the caller graph for this function:



# 6.28 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/gas_drag.f File Reference

## Functions/Subroutines

- subroutine GAS_DRAG (A_M, B_M, VXF_GS, IER, UV, VV, WV)

  *Purpose: DES - Accounting for the equal and opposite drag force on gas due to particles by introducing the drag as a source term. Face centered.*

## 6.28.1 Function Documentation

### 6.28.1.1 subroutine GAS_DRAG (DOUBLE PRECISION,dimension(dimension_3, -3:3, 0:dimension_m) *A_M*, DOUBLE PRECISION,dimension(dimension_3, 0:dimension_m) *B_M*, DOUBLE PRECISION,dimension(dimension_3, dimension_m) *VXF_GS*, INTEGER *IER*, INTEGER *UV*, INTEGER *VV*, INTEGER *WV*)

Purpose: DES - Accounting for the equal and opposite drag force on gas due to particles by introducing the drag as a source term. Face centered.

Definition at line 15 of file gas_drag.f.

References DISCRETELEMENT::DES_INTERP_ON, and DISCRETELEMENT::DIMN.

# 6.29 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/generate_particle_config.f File Reference

## Functions/Subroutines

- subroutine GENERATE_PARTICLE_CONFIG
- subroutine GENER_LATTICE_MOD (NBODY, DOMLIN, XC, DBDY)
- subroutine SET_INITIAL_VELOCITY
- subroutine writeic
- subroutine init_particles_jn

## 6.29.1 Function Documentation

### 6.29.1.1 subroutine GENER_LATTICE_MOD (INTEGER,intent(in) *NBODY*, double precision,dimension(dimn),intent(in) *DOMLIN*, DOUBLE PRECISION,dimension(nbody,dimn),intent(out) *xc*, double precision,dimension(nbody),intent(inout) *DBDY*)

Definition at line 122 of file generate_particle_config.f.

Referenced by GENERATE_PARTICLE_CONFIG().

Here is the caller graph for this function:


### 6.29.1.2 subroutine GENERATE_PARTICLE_CONFIG ()

Definition at line 15 of file generate_particle_config.f.

References DISCRETELEMENT::DES_EPS_XSTART, DISCRETELEMENT::DES_EPS_YSTART, DISCRETELEMENT::DES_EPS_ZSTART, DISCRETELEMENT::DES_POS_NEW, DISCRETELEMENT::DES_POS_OLD, DISCRETELEMENT::DES_RADIUS, DISCRETELEMENT::DES_VEL_NEW, DISCRETELEMENT::DES_VEL_OLD, GENER_LATTICE_MOD(), DISCRETELEMENT::OMEGA_NEW, DISCRETELEMENT::OMEGA_OLD, DISCRETELEMENT::PART_MPHASE, DISCRETELEMENT::PARTICLES, and DISCRETELEMENT::RO_Sol.

Here is the call graph for this function:


### 6.29.1.3 subroutine init_particles_jn ()

Definition at line 495 of file generate_particle_config.f.

References DISCRETELEMENT::DES_POS_OLD, DISCRETELEMENT::DES_RADIUS, DISCRETELEMENT::DES_VEL_NEW, DISCRETELEMENT::DES_VEL_OLD, DISCRETELEMENT::GENER_PART_CONFIG, DISCRETELEMENT::PARTICLES,

DISCRETELEMENT::pvel_mean, DISCRETELEMENT::PVEL_StDev, and DISCRETELEMENT::RO_Sol.

#### 6.29.1.4 subroutine SET_INITIAL_VELOCITY ()

Definition at line 205 of file generate_particle_config.f.

References DISCRETELEMENT::DES_PERIODIC_WALLS, DISCRETELEMENT::DES_PERIODIC_-WALLS_X, DISCRETELEMENT::DES_PERIODIC_WALLS_Y, DISCRETELEMENT::DES_-PERIODIC_WALLS_Z, DISCRETELEMENT::DES_POS_NEW, DISCRETELEMENT::DES_-VEL_NEW, DISCRETELEMENT::DES_VEL_OLD, DISCRETELEMENT::DIMN, DISCRETELE-MENT::gstencil, DISCRETELEMENT::interp_scheme, DISCRETELEMENT::PARTICLES, DIS-CRETELEMENT::PIJK, DISCRETELEMENT::vel_fp, DISCRETELEMENT::vstencil, DISCRETELE-MENT::weightp, DISCRETELEMENT::XE, DISCRETELEMENT::YN, and DISCRETELEMENT::ZT.

#### 6.29.1.5 subroutine writeic ()

Definition at line 464 of file generate_particle_config.f.

References DISCRETELEMENT::DES_POS_NEW, DISCRETELEMENT::DES_VEL_NEW, and DIS-CRETELEMENT::DIMN.

# 6.30 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/grid_based_neighbor_search.f File Reference

## Functions/Subroutines

- subroutine GRID_BASED_NEIGHBOR_SEARCH

  *Purpose: Cell linked search.*

## 6.30.1 Function Documentation

### 6.30.1.1 subroutine GRID_BASED_NEIGHBOR_SEARCH ()

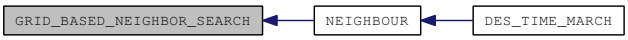
Purpose: Cell linked search.

Definition at line 10 of file grid_based_neighbor_search.f.

References DISCRETELEMENT::DES_PERIODIC_WALLS_X, DISCRETELEMENT::DES_PERIODIC_WALLS_Y, DISCRETELEMENT::DES_PERIODIC_WALLS_Z, DISCRETELEMENT::DES_POS_NEW, DISCRETELEMENT::DES_RADIUS, DISCRETELEMENT::FACTOR_RLM, DISCRETELEMENT::MAX_PIS, DISCRETELEMENT::MN, DISCRETELEMENT::NEIGHBOURS, DISCRETELEMENT::PEA, DISCRETELEMENT::PIJK, and DISCRETELEMENT::PIS.

Referenced by NEIGHBOUR().

Here is the caller graph for this function:



## 6.31 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/interpolation_mod.f File Reference

### Data Types

- interface interpolation::interpolator

### Modules

- module interpolation

### Functions/Subroutines

- subroutine interpolation::set_interpolation_stencil (PC, IW, IE, JS, JN, KB, KTP, isch, dimprob, ordernew)
- subroutine interpolation::interp_oned_scalar (coor, scalar, ppos, interp_scl, order, isch, weight_-pointer)
- subroutine interpolation::set_interpolation_scheme (choice)

### Variables

- INTEGER, parameter interpolation::prcn = 8
- INTEGER, parameter interpolation::iprec = 8
- DOUBLE PRECISION, parameter interpolation::two = 2.0_iprec
- DOUBLE PRECISION, parameter interpolation::three = 3.0_iprec
- DOUBLE PRECISION, parameter interpolation::four = 4.0_iprec
- DOUBLE PRECISION, parameter interpolation::six = 6.0_iprec
- DOUBLE PRECISION, parameter interpolation::fourth = 0.25_iprec
- INTEGER, parameter interpolation::maxorder = 6
- DOUBLE PRECISION, dimension(maxorder), target interpolation::xval
- DOUBLE PRECISION, dimension(maxorder), target interpolation::yval
- DOUBLE PRECISION, dimension(maxorder), target interpolation::zval
- DOUBLE PRECISION, dimension(maxorder-1) interpolation::dx
- DOUBLE PRECISION, dimension(maxorder-1) interpolation::dy
- DOUBLE PRECISION, dimension(maxorder-1) interpolation::dz
- DOUBLE PRECISION, dimension(maxorder, maxorder, maxorder), target interpolation::weights

# 6.32 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/make_arrays_des.f File Reference

## Functions/Subroutines

- subroutine MAKE_ARRAYS_DES

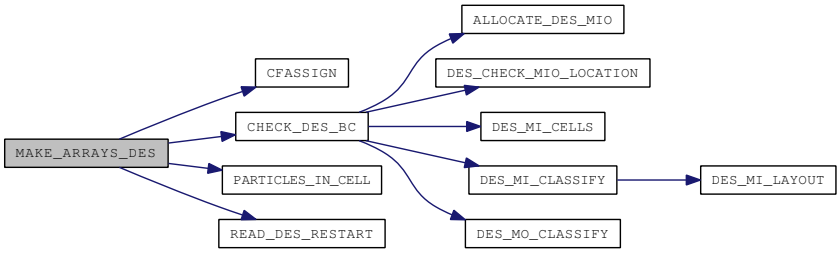
## 6.32.1 Function Documentation

### 6.32.1.1 subroutine MAKE_ARRAYS_DES ()

Definition at line 13 of file make_arrays_des.f.

References CFASSIGN(), CHECK_DES_BC(), PARTICLES_IN_CELL(), and READ_DES_RESTART().

Here is the call graph for this function:



# 6.33 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/neighbour.f File Reference

## Functions/Subroutines

- subroutine NEIGHBOUR

  *Purpose: DES - Neighbors search; N-Square, Quadtree(2D)/Octree(3D) Now also Cell linked search Aug 07.*

## 6.33.1 Function Documentation

### 6.33.1.1 subroutine NEIGHBOUR ()

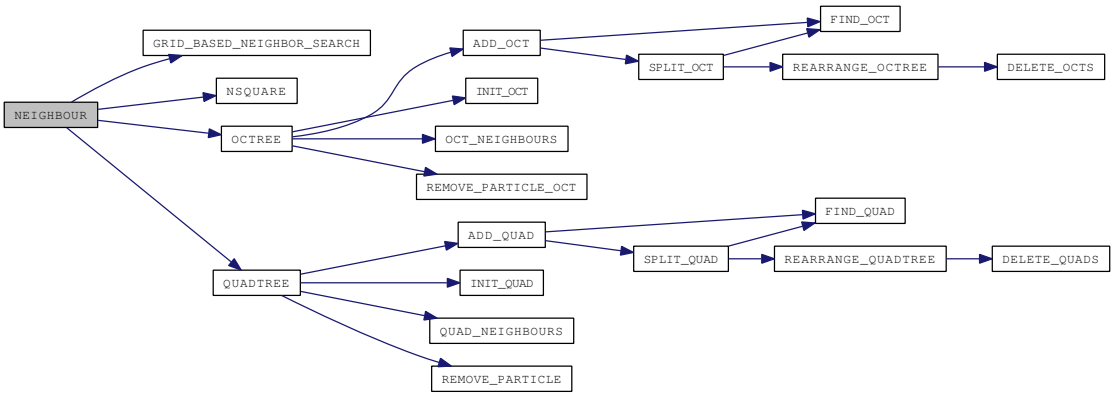
Purpose: DES - Neighbors search; N-Square, Quadtree(2D)/Octree(3D) Now also Cell linked search Aug 07.

Definition at line 14 of file neighbour.f.

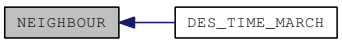
References GRID_BASED_NEIGHBOR_SEARCH(), NSQUARE(), OCTREE(), and QUADTREE().

Referenced by DES_TIME_MARCH().

Here is the call graph for this function:




Here is the caller graph for this function:



# 6.34 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/nsquare.f File Reference

## Functions/Subroutines

- subroutine NSQUARE

  *Purpose: DES - N-Square neighbor search.*

## 6.34.1 Function Documentation

### 6.34.1.1 subroutine NSQUARE ()

Purpose: DES - N-Square neighbor search.

Definition at line 12 of file nsquare.f.

Referenced by NEIGHBOUR().

Here is the caller graph for this function:

# 6.35 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/octree.f File Reference

## Functions/Subroutines

- subroutine OCTREE

  *Purpose: To find neighbors in 3D using octree search method.*

- subroutine INIT_OCT
- subroutine REMOVE_PARTICLE_OCT (II, PQD)
- subroutine ADD_OCT (II, IQS)
- subroutine FIND_OCT (I, Q)
- subroutine SPLIT_OCT (Q)
- subroutine DELETE_OCTS (II)
- subroutine REARRANGE_OCTREE (MNQD)
- subroutine OCT_NEIGHBOURS (II, NQ)

## 6.35.1 Function Documentation

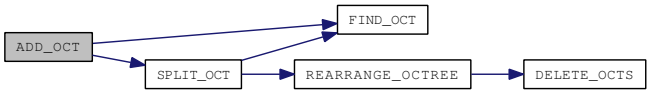
### 6.35.1.1 subroutine ADD_OCT (INTEGER *II*, INTEGER *IQS*)

Definition at line 263 of file octree.f.

References FIND_OCT(), and SPLIT_OCT().

Referenced by OCTREE().

Here is the call graph for this function:




Here is the caller graph for this function:


### 6.35.1.2 subroutine DELETE_OCTS (INTEGER *II*)

Definition at line 467 of file octree.f.

Referenced by REARRANGE_OCTREE().

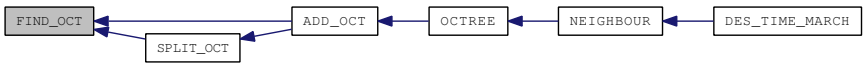
Here is the caller graph for this function:

#### 6.35.1.3 subroutine FIND_OCT (INTEGER *I*, INTEGER *Q*)

Definition at line 297 of file octree.f.

Referenced by ADD_OCT(), and SPLIT_OCT().

Here is the caller graph for this function:




#### 6.35.1.4 subroutine INIT_OCT ()

Definition at line 156 of file octree.f.

Referenced by OCTREE().

Here is the caller graph for this function:


#### 6.35.1.5 subroutine OCT_NEIGHBOURS (INTEGER *II*, INTEGER *NQ*)

Definition at line 560 of file octree.f.

Referenced by OCTREE().

Here is the caller graph for this function:


#### 6.35.1.6 subroutine OCTREE ()

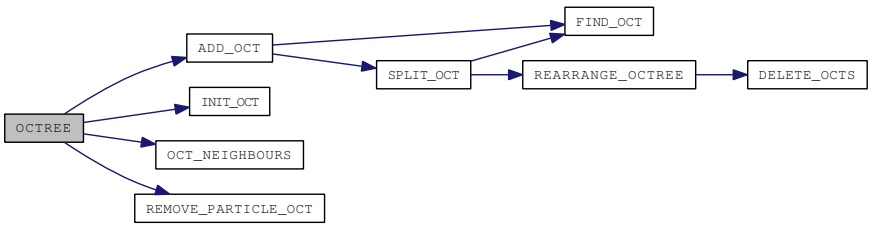
Purpose: To find neighbors in 3D using octree search method.

Definition at line 11 of file octree.f.

References ADD_OCT(), INIT_OCT(), OCT_NEIGHBOURS(), and REMOVE_PARTICLE_OCT().

Referenced by NEIGHBOUR().

Here is the call graph for this function:



Here is the caller graph for this function:


#### 6.35.1.7 subroutine REARRANGE_OCTREE (INTEGER *MNQD*)

Definition at line 510 of file octree.f.

References DELETE_OCTS().

Referenced by SPLIT_OCT().

Here is the call graph for this function:


Here is the caller graph for this function:


#### 6.35.1.8 subroutine REMOVE_PARTICLE_OCT (INTEGER *II*, INTEGER *PQD*)

Definition at line 223 of file octree.f.

Referenced by OCTREE().

Here is the caller graph for this function:


#### 6.35.1.9 subroutine SPLIT_OCT (INTEGER *Q*)

Definition at line 344 of file octree.f.

References FIND_OCT(), and REARRANGE_OCTREE().

Referenced by ADD_OCT().

Here is the call graph for this function:

Here is the caller graph for this function:

# 6.36 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/particles_in_cell.f File Reference

## Functions/Subroutines

- subroutine PARTICLES_IN_CELL

  *Purpose: DES - Finding the fluid computational cell in which a particle lies, to calculte void fraction and also the volume averaged solids velocity of the cell.*

## 6.36.1 Function Documentation

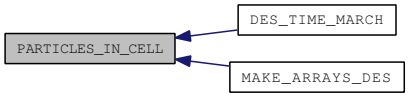
### 6.36.1.1 subroutine PARTICLES_IN_CELL ()

Purpose: DES - Finding the fluid computational cell in which a particle lies, to calculte void fraction and also the volume averaged solids velocity of the cell.

Definition at line 20 of file particles_in_cell.f.

Referenced by DES_TIME_MARCH(), and MAKE_ARRAYS_DES().

Here is the caller graph for this function:



# 6.37 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/quadtree.f File Reference

## Functions/Subroutines

- subroutine QUADTREE

  *Purpose: To find particle neighbors in 2D using quadtree method.*

- subroutine INIT_QUAD
- subroutine REMOVE_PARTICLE (II, PQD)
- subroutine ADD_QUAD (II, IQS)
- subroutine FIND_QUAD (I, Q)
- subroutine SPLIT_QUAD (Q)
- subroutine DELETE_QUADS (II)
- subroutine REARRANGE_QUADTREE (MNQD)
- subroutine QUAD_NEIGHBOURS (II, NQ)

## 6.37.1 Function Documentation

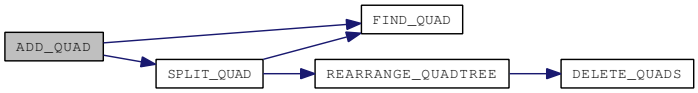
### 6.37.1.1 subroutine ADD_QUAD (INTEGER *II*, INTEGER *IQS*)

Definition at line 249 of file quadtree.f.

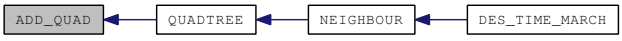
References FIND_QUAD(), and SPLIT_QUAD().

Referenced by QUADTREE().

Here is the call graph for this function:




Here is the caller graph for this function:




### 6.37.1.2 subroutine DELETE_QUADS (INTEGER *II*)

Definition at line 402 of file quadtree.f.

Referenced by REARRANGE_QUADTREE().

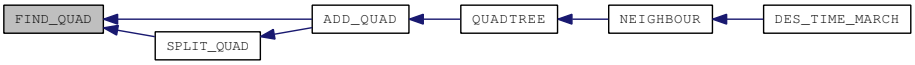
Here is the caller graph for this function:

#### 6.37.1.3 subroutine FIND_QUAD (INTEGER *I*, INTEGER *Q*)

Definition at line 282 of file quadtree.f.

Referenced by ADD_QUAD(), and SPLIT_QUAD().

Here is the caller graph for this function:




#### 6.37.1.4 subroutine INIT_QUAD ()

Definition at line 147 of file quadtree.f.

Referenced by QUADTREE().

Here is the caller graph for this function:


#### 6.37.1.5 subroutine QUAD_NEIGHBOURS (INTEGER *II*, INTEGER *NQ*)

Definition at line 492 of file quadtree.f.

Referenced by QUADTREE().

Here is the caller graph for this function:


#### 6.37.1.6 subroutine QUADTREE ()

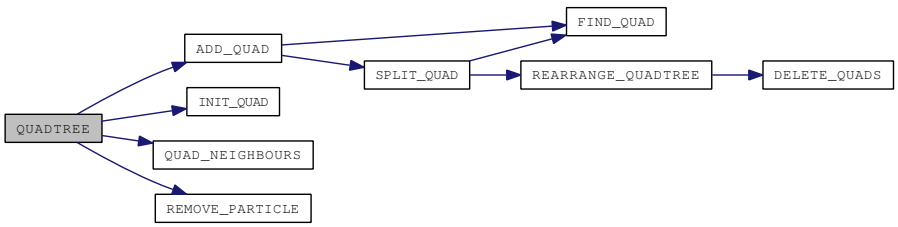
Purpose: To find particle neighbors in 2D using quadtree method.

Definition at line 11 of file quadtree.f.

References ADD_QUAD(), INIT_QUAD(), QUAD_NEIGHBOURS(), and REMOVE_PARTICLE().

Referenced by NEIGHBOUR().

Here is the call graph for this function:



Here is the caller graph for this function:


#### 6.37.1.7 subroutine REARRANGE_QUADTREE (INTEGER *MNQD*)

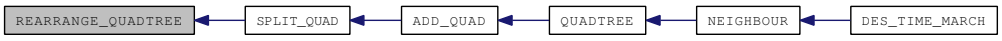
Definition at line 441 of file quadtree.f.

References DELETE_QUADS().

Referenced by SPLIT_QUAD().

Here is the call graph for this function:


Here is the caller graph for this function:




#### 6.37.1.8 subroutine REMOVE_PARTICLE (INTEGER *II*, INTEGER *PQD*)

Definition at line 210 of file quadtree.f.

Referenced by QUADTREE().

Here is the caller graph for this function:

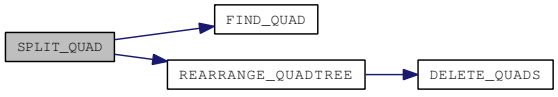

#### 6.37.1.9 subroutine SPLIT_QUAD (INTEGER *Q*)

Definition at line 321 of file quadtree.f.

References FIND_QUAD(), and REARRANGE_QUADTREE().

Referenced by ADD_QUAD().

Here is the call graph for this function:



Here is the caller graph for this function:

# 6.38 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/randomno_mod.f File Reference

## Modules

- module randomno

## Functions/Subroutines

- subroutine randomno::UNI_RNO (Y)
- subroutine randomno::NOR_RNO (Y, mean, sigma)

# 6.39 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/read_des_restart.f File Reference

## Functions/Subroutines

- subroutine READ_DES_RESTART

  *Purpose: Reading DES data for restart.*

## 6.39.1 Function Documentation

### 6.39.1.1 subroutine READ_DES_RESTART ()

Purpose: Reading DES data for restart.

Definition at line 11 of file read_des_restart.f.

Referenced by MAKE_ARRAYS_DES().

Here is the caller graph for this function:

# 6.40 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/walledgecontact.f File Reference

## Functions/Subroutines

- subroutine WALLEDGECONTACT (cijk, l, wallcontacti)

  *Purposes: Check if particle contacts with the edge of wall cell, if it does, generate the wall particle.*

## 6.40.1 Function Documentation

### 6.40.1.1 subroutine WALLEDGECONTACT (INTEGER *cijk*, INTEGER *L*, INTEGER *WALLCONTACTI*)

Purposes: Check if particle contacts with the edge of wall cell, if it does, generate the wall particle.

Definition at line 11 of file walledgecontact.f.

# 6.41 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/wallfacecontact.f File Reference

## Functions/Subroutines

- subroutine WALLFACECONTACT (WALL, L, WALLCONTACTI)

  *Purposes: Check if particle contacts with the face of wall cell, if it does, generate the wall particle.*

## 6.41.1 Function Documentation

### 6.41.1.1 subroutine WALLFACECONTACT (INTEGER *WALL*, INTEGER *L*, INTEGER *WALLCONTACTI*)

Purposes: Check if particle contacts with the face of wall cell, if it does, generate the wall particle.

Definition at line 11 of file wallfacecontact.f.

# 6.42 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/wallnodecontact.f File Reference

## Functions/Subroutines

- subroutine WALLNODECONTACT (CIJK, L, WALLCONTACTI)

  *Purposes: Check if particle contacts with the node of wall cell, if it does, generate the wall particle.*

## 6.42.1 Function Documentation

### 6.42.1.1 subroutine WALLNODECONTACT (INTEGER *cijk*, INTEGER *L*, INTEGER *WALLCONTACTI*)

Purposes: Check if particle contacts with the node of wall cell, if it does, generate the wall particle.

Definition at line 11 of file wallnodecontact.f.

# 6.43 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_-new/des/write_des_data.f File Reference

## Functions/Subroutines

- subroutine WRITE_DES_DATA

  *Purpose: Writing DES output in Paraview format.*

## 6.43.1 Function Documentation

### 6.43.1.1 subroutine WRITE_DES_DATA ()

Purpose: Writing DES output in Paraview format.

Definition at line 12 of file write_des_data.f.

Referenced by DES_TIME_MARCH().

Here is the caller graph for this function:

# 6.44 C:/Users/8sx/cygwin/home/8sx/dem-studies/mfix/model_new/des/write_des_restart.f File Reference

## Functions/Subroutines

- subroutine WRITE_DES_RESTART

  *Purpose: Writing DES data for restart.*

## 6.44.1 Function Documentation

### 6.44.1.1 subroutine WRITE_DES_RESTART ()

Purpose: Writing DES data for restart.

Definition at line 11 of file write_des_restart.f.

Referenced by DES_TIME_MARCH().

Here is the caller graph for this function:

# Index