

iPM1D

1.0

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## Chapter 1

# 数据型索引

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# 数据类型索引

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## Chapter 3

# 数据型文档

### 3.1 modulecontrolflow::controlflow 型参考手册

#### Public 属性

- real(8) **dx** =Inputdx
- real(8) **dt** =Inputdt
- integer(4) **particlepergrid** =400
- real(8) **initdensity** =1.d15
- integer(4) **ns** =0
- integer(4) **ng** =0
- integer(4) **nx** =NxMax
- integer(4) **nxl** =0
- integer(4) **nxu** =NxMax-1
- integer(4) **timer** =0
- integer(4) **period** =0
- integer(4) **nrun** =0
- integer(4) **ndiagshort** =1
- integer(4) **ndiaglong** =0
- logical **restartparticles** =.False.

模块 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/ControlFlow.f90

### 3.2 modulegrid::DumpGrid 接口参考手册

#### Public 成函数

- subroutine **dumpgrid** (GD, Mode)

接口 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

### 3.3 modulefield::field 型参考手册

#### Public 成函数

- procedure **dump** =>dumpfield
- procedure **load** =>loadfield

#### Public 属性

- integer(4) **nx** =NxMax
- real(8) **dx** =Inputdx
- real(8) **dt** =Inputdt
- real(8), dimension(1:nxmax) **ex** =0.d0
- real(8), dimension(1:nxmax) **ey** =0.d0
- real(8), dimension(1:nxmax) **ez** =0.d0
- real(8), dimension(1:nxmax) **bx** =0.d0
- real(8), dimension(1:nxmax) **by** =0.d0
- real(8), dimension(1:nxmax) **bz** =0.d0
- real(8), dimension(1:nxmax) **rho**
- real(8), dimension(1:nxmax) **phi**
- real(8), dimension(1:nxmax) **chi**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Field.f90

### 3.4 modulefieldboundary::fieldboundary 型参考手册

#### Public 成函数

- procedure **init** =>initilizationfieldbounday
- procedure **updater** =>updaterfieldbounday

#### Public 属性

- integer(4) **fieldboundarymodel** =21
- integer(4) **timer** =0
- integer(4) **period**
- real(8) **dt** =Inputdt
- real(8), dimension(2) **frequency** =(/60.d6,2.d6/)
- real(8), dimension(2) **voltage** =(/1000.d0,100.d0/)
- real(8) **v1** =0.d0
- real(8) **v2** =0.d0
- real(8) **vdc** =0.d0

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/pic/FieldBounday.F90

### 3.5 modulefield::fielddone 型参考手册

#### Public 属性

- integer(4) **nx** =NxMax
- real(8) **dx** =Inputdx
- real(8) **dt** =Inputdt
- real(8), dimension(1:nxmax) **rhoone**
- real(8), dimension(1:nxmax) **chione**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Field.f90

### 3.6 modulefield::fieldsolver 型参考手册

#### Public 成函数

- procedure **dump** =>dumpfieldsolver

#### Public 属性

- integer(4) **ns** =NxMax-2
- real(8) **dx** =Inputdx
- real(8) **dt** =Inputdt
- real(8), dimension(1:nxmax-2) **source**
- real(8), dimension(1:nxmax-2) **solve**
- real(8), dimension(1:nxmax-2) **coea**
- real(8), dimension(1:nxmax-2) **coeb**
- real(8), dimension(1:nxmax-2) **coec**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Field.f90

### 3.7 modulespecyone::gasone 型参考手册

#### Public 属性

- character(99) **name**
- integer(4) **mcmmodel** =-1
- integer(4) **ns**
- integer(4) **indexstart**
- real(8) **mass**
- real(8) **radius**
- real(8) **natom**
- real(8) **betamax**
- real(8) **initdensity**
- real(8) **density**
- real(8) **inittemperature**
- real(8) **temperature**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/SpecyOne.f90

### 3.8 modulespecyone::gasphysical 型参考手册

#### Public 属性

- character(99) **name** = "Ar"
- integer(4) **mcmodel** = 1
- integer(4) **natom**
- integer(4) **ns**
- real(8) **mass**
- real(8) **radius** = 0.d0
- real(8) **betamax** = 0.d0
- type(specyonephysical), dimension(nsmax) **sp**

构体的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/SpecyOne.f90

### 3.9 modulegrid::grid 型参考手册

#### Public 成函数

- procedure(InitGridBase), deferred **initbase**
- procedure(DumpGrid), deferred **dump**
- procedure(RescaleGrid), deferred **rescale**
- procedure(ResetGrid), deferred **reset**

#### Public 属性

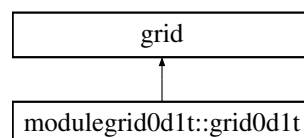
- integer(4) **ns** = 1
- integer(4) **shift** = 0
- integer(4) **mode** = 0
- integer(4) **timer** = 0
- integer(4) **period** = 1
- integer(4) **dumpmode** = 0

构体的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

### 3.10 modulegrid0d1t::grid0d1t 型参考手册

modulegrid0d1t::grid0d1t 承系:



**Public 成函数**

- procedure **initbase** => initializationgrid0d1tbase
- procedure **dump** => dumpgrid0d1t
- procedure **rescale** => rescalegrid0d1t
- procedure **reset** => resetgrid0d1t
- procedure **initarray** => initializationgrid0d1tarray

**Public 属性**

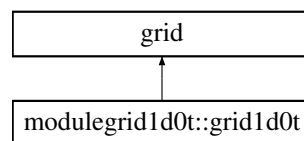
- integer(4) **nt**
- real(8) **dt** =0.d0
- real(8), dimension(:,:), allocatable **value**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

**3.11 modulegrid1d0t::grid1d0t 型参考手册**

modulegrid1d0t::grid1d0t 承系:

**Public 成函数**

- procedure **initbase** => initializationgrid1d0tbase
- procedure **dump** => dumpgrid1d0t
- procedure **rescale** => rescalegrid1d0t
- procedure **reset** => resetgrid1d0t
- procedure **update** => updategrid1d0t
- procedure **initarray** => initializationgrid1d0tarray

**Public 属性**

- integer(4) **nx**
- real(8) **dx** =0.d0
- real(8), dimension(:,:), allocatable **value**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

### 3.12 modulegrid::InitGridBase 接口参考手册

#### Public 成函数

- subroutine **initgridbase** (GD, Ns, Period, Mode, Timer)

接口 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

### 3.13 moduletypemcc::mccbundle 型参考手册

#### Public 成函数

- procedure **dump** =>dumpmccbundle

#### Public 属性

- integer(4) **model**
- integer(4) **nreaction** =0
- integer(4) **nsigma** =0
- real(8) **energymin**
- real(8) **energyinterval**
- real(8) **energymax**
- real(8) **collisionratio**
- real(8) **sigmamax**
- type(specyone), pointer **so** =>Null()
- type(gasone), pointer **go** =>Null()
- type(reactionone), dimension(:), allocatable **reaction**
- real(8), dimension(:,:), allocatable **probability**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/mc/TypeMCC.f90

### 3.14 moduletypemcc::mccparticleone 型参考手册

#### Public 成函数

- procedure **select** =>selectmccparticleone
- procedure **updater** =>updatemccparticleone
- procedure **velocityupdater** =>updatevelocitymccparticleone

**Public 属性**

- integer(4) **reactionindex** =0
- logical **particleannihilation** =.False.
- logical **particlecreation** =.False.
- type(particleone), pointer **poi** =>Null()
- real(8) **miu**
- real(8) **massratio**
- real(8) **energy**
- real(8) **beta** =0.d0
- real(8) **gx**
- real(8) **gy**
- real(8) **gz**
- real(8) **gper**
- real(8) **g**
- type(particleone) **pot**
- integer(4) **nponew** =0
- type(particleoneindex), dimension(:), allocatable **pon**

该文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/mc/TypeMCC.f90

**3.15 moduleparticleboundary::particleboundaryone 型参考手册****Public 成函数**

- Procedure **allinit** =>initializationparticleboundaryone

**Public 属性**

- integer(4) **particleboundarymodel** =11
- real(8) **xmin** =0.d0
- real(8) **xmax** =dble(NxMax-1)
- integer **countminone** =0
- integer **countmaxone** =0
- integer **countmin** =0
- integer **countmax** =0
- type(particlebundle) **pblower**
- type(particlebundle) **pbupper**

该文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/ParticleBoundary.f90

### 3.16 moduleparticlebundle::particlebundle 型参考手册

#### Public 成函数

- Procedure **allinit** =>allinitializationparticlebundle
- Procedure **addone** =>addparticleoneparticlebundle
- Procedure **delone** =>delparticleoneparticlebundle
- Procedure **posres** =>positionrescaleparticlebundle
- Procedure **velres** =>velocityrescaleparticlebundle
- Procedure **movees** =>moveelectrostaticparticlebundle
- Procedure **moveem** =>moveelectromagneticparticlebundle
- Procedure **weightp2c** =>weightp2cparticlebundle
- Procedure **dump** =>dumpparticlebundle
- Procedure **load** =>loadparticlebundle
- Procedure **norm** =>particlebundlenormalization

#### Public 属性

- integer(4) **npar** =0
- integer(4) **nparnormal** =1000
- real(8) **xfactor**
- real(8) **vfactor**
- logical **lxscaled** =.False.
- logical **lvscaled** =.False.
- real(8) **charge**
- real(8) **mass**
- real(8) **weight**
- real(8) **dx**
- real(8) **dt**
- type(specyone), pointer **so**
- type(particleone), dimension(:), allocatable **po**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMTutorial/code/base/ParticleBundle.f90

### 3.17 moduleparticlebundle::particlebundleindex 型参考手册

#### Public 成函数

- Procedure **init** =>initializationparticlebundleindex
- Procedure **addone** =>addparticleoneparticlebundleindex
- Procedure **delone** =>delparticleoneparticlebundleindex



**Public 属性**

- integer(4) **npar** =0
- integer(4) **nparnormal** =10000
- type(particleoneindex), dimension(:), allocatable **poi**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMTutorial/code/base/ParticleBundle.f90

**3.18 diagnosticscollisionrate::particlecollisionrate 型参考手册****Public 属性**

- integer(4) **nx** =NxMax
- integer(4) **nreaction**
- real(8), dimension(nxmax, nreactionmax) **collisionrate**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMTutorial/code/diagnostics/DiagCollisionRate.f90

**3.19 diagnosticseepf::particleedf 型参考手册****Public 属性**

- integer(4) **ne** =NeMax
- real(8) **energyinterval**
- real(8) **mass**
- real(8), dimension(nemax) **edf**
- real(8), dimension(nemax) **edfnormalized**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMTutorial/code/diagnostics/DiagEEPF.f90

**3.20 diagnosticsmomentum::particlemomentumone 型参考手册****Public 属性**

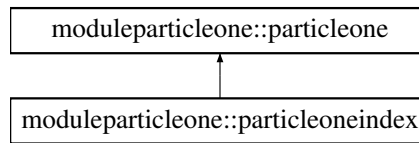
- integer(4) **nx** =NxMax
- integer(4) **timer** =0
- real(8) **dx** =Inputdx
- real(8) **dt** =Inputdt
- real(8), dimension(1:nxmax) **rhoone**
- real(8), dimension(1:nxmax) **chione**
- real(8), dimension(1:nxmax) **jxone**
- real(8), dimension(1:nxmax) **jyone**
- real(8), dimension(1:nxmax) **jzone**
- real(8), dimension(1:nxmax) **tone**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMTutorial/code/diagnostics/DiagMomentum.f90

### 3.21 moduleparticleone::particleone 型参考手册

moduleparticleone::particleone 承系:



#### Public 成函数

- procedure **posinit** => positionrandominitializationparticleone
- procedure **velinipinit** => velocityinputinitializationparticleone
- procedure **velmaxinit** => velocitymaxwellianinitializationparticleone
- procedure **velraninit** => velocityrandominitializationparticleone
- procedure **accinipinit** => accelerationinputinitializationparticleone
- procedure **posres** => positionrescaleparticleone
- procedure **velres** => velocityrescaleparticleone
- procedure **accres** => accelerationrescaleparticleone
- procedure **energy** => energyparticleone
- procedure **copy** => copyparticleone
- procedure **swap** => swapparticleone
- procedure **weightp2c** => weightp2cparticleone
- procedure **weightc2pes** => weightc2pelectrostaticparticleone
- procedure **movees** => moveelectrostaticparticleone
- procedure **weightc2pem** => weightc2pelectromagneticparticleone
- procedure **moveem** => moveelectromagneticparticleone

#### Public 属性

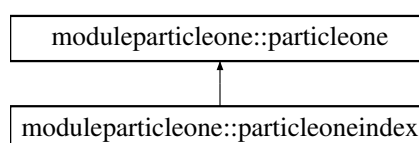
- real(8) **x**
- real(8) **vx**
- real(8) **vy**
- real(8) **vz**
- real(8) **ax**
- real(8) **ay**
- real(8) **az**

构体的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMTutorial/code/base/ParticleOne.f90

### 3.22 moduleparticleone::particleoneindex 型参考手册

moduleparticleone::particleoneindex 承系:



### Public 成函数

- procedure **indexinit** =>indexinitializationparticleoneindex
- procedure **copy** =>copyparticleoneindex
- procedure **swap** =>swapparticleoneindex

### Public 属性

- integer(4) **index**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/ParticleOne.f90

## 3.23 moduletypemcc::reactionone 型参考手册

### Public 属性

- integer(4) **reactant**
- integer(4) **reactiontype**
- integer(4) **resultant**
- real(8) **threshold**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/mc/TypeMCC.f90

## 3.24 modulegrid::RescaleGrid 接口参考手册

### Public 成函数

- subroutine **rescalegrid** (GD)

接口 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

## 3.25 modulegrid::ResetGrid 接口参考手册

### Public 成函数

- subroutine **resetgrid** (GD)

接口 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/Grid.f90

### 3.26 modulemccsigma::sigmanormalized 型参考手册

#### Public 属性

- integer(4) **model**
- integer(4) **nreaction** =0
- integer(4) **nsigma** =0
- real(8) **energymin**
- real(8) **energyinterval** =0.d0
- real(8) **energymax**
- type(reactionone), dimension(:), allocatable **reaction**
- real(8), dimension(:,:), allocatable **sigma**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/mc/MCCSigma.f90

### 3.27 modulemccsigma::sigmaraw 型参考手册

#### Public 属性

- type(reactionone) **reaction**
- real(8), dimension(1:2, 1:nsigmarawmax) **energysigma** =0.d0

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/mc/MCCSigma.f90

### 3.28 modulespecyone::specyone 型参考手册

#### Public 属性

- character(99) **name**
- integer(4) **specyindex** =-1
- integer(4) **gasindex** =-1
- real(8) **charge**
- real(8) **mass**
- real(8) **radius**
- real(8) **natom**
- real(8) **initdensity**
- real(8) **density**
- real(8) **inittemperature**
- real(8) **temperature**

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/SpecyOne.f90

## 3.29 modulespecyone::specyonephysical 型参考手册

### Public 属性

- character(99) **name** = "Ar+"
- integer(4) **natom** = 1
- integer(4) **charge** = 0
- real(8) **mass** = 0.d0
- real(8) **radius** = 1.d0

构体 的文档由以下文件生成:

- D:/Source/Repos/iPM1D/1DPICMCTutorial/code/base/SpecyOne.f90



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