

21.4 DiscreteField object

The DiscreteField object defines a varying field whose values correspond to distinct points within a domain.

The DiscreteField object is derived from the [Field](#) object.

Access

```
import fields
mdb.models[name].discreteFields[name]
```

21.4.1 DiscreteField(...)

This method creates a DiscreteField object.

Path

```
mdb.models[name].DiscreteField
```

Required arguments

name

A String specifying the repository key.

defaultValues

A sequence of Floats specifying a sequence of floats specifying the default values.

fieldType

A SymbolicConstant or an Int specifying the type of data represented by this discrete field. Possible values are SCALAR, ORIENTATION, and PRESCRIBEDCONDITION_DOF.

Optional arguments

location

A SymbolicConstant or an Int specifying the location of the domain data. Possible values are NODES and ELEMENTS. The default value is NODES.

dataWidth

An Int specifying the width of the supplied data. The default value is 1.

data

A [DataTableArray](#) object.

description

A String specifying the description of the field. The default value is an empty string.

orientationType

A SymbolicConstant specifying the type of the system being described by a discrete field used for an orientation. Possible values are CARTESIAN, CYLINDRICAL, and SPHERICAL. The default value is CARTESIAN.

partLevelOrientation

A Boolean specifying whether or not the orientations are described in terms of part level coordinates. The default value is OFF.

Return value

A DiscreteField object.

Exceptions

AbaqusException.

21.4.2 DiscreteFieldByVolumeFraction(...)

This method creates a DiscreteField object that represents the volume fraction of each element of an Eulerian Instance that is occupied by a reference instance.

Path

```
mdb.models[name].rootAssembly.DiscreteFieldByVolumeFraction
```

Required arguments

name

A String specifying the repository key.

eulerianInstance

A [PartInstance](#) object specifying the elements for which volume fraction values will be computed.

referenceInstance

A [PartInstance](#) object specifying the region that either contains material or is empty of material.

Optional arguments

accuracy

A Symbolic Constant specifying the level of accuracy that will be used in computing volume fractions. Possible values are LOW, MEDIUM, or HIGH. The default value is MEDIUM.

materialLocation

A Symbolic Constant indicating whether the material is inside or outside the *referenceInstance*.

Possible values are INSIDE or OUTSIDE. The default value is INSIDE.

description

A String specifying the description of the field. The default value is an empty string.

scaleFactor

A float specifying the fraction of the volume that is occupied by the *referenceInstance*. Valid values are between 0 and 1.

Return value

A DiscreteField object.

Exceptions

AbaqusException.

21.4.3 DiscreteFieldFromAnalytic(...)

This method creates a DiscreteField object from a [AnalyticalField](#) object.

Path

```
mdb.models[name].DiscreteFieldFromAnalytic
```

Required arguments

name

A String specifying the repository key.

location

A SymbolicConstant or an Int specifying the location of the domain data. Possible values are NODES and ELEMENTS. The default value is NODES.

analyticFieldName

A String specifying the name of the [AnalyticalField](#) containing the source data.

region

A [Region](#) object for the field.

Optional arguments

None.

Return value

A DiscreteField object.

Exceptions

AbaqusException.

21.4.4 setValues(...)

This method modifies the DiscreteField object.

Required arguments

None.

Optional arguments

The optional arguments to `setValues` are the same as the arguments to the [DiscreteField](#) method, except for the *name* argument.

Return value

None

Exceptions

21.4.5 Members

The DiscreteField object has members with the same names and descriptions as the arguments to the [DiscreteField](#) method.