

# Example documentation

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# Introduction

DIP Documentation

# Parameters

## Node types

	Declaration		Injection
	Definition		Import
	Declaration / Modification		
	Definition / Modification		
	Modification		

## Parameter list

Property name	#	#	#	#	#	#	#
<a href="#">box.geometry</a>		1				1	
<a href="#">box.size.vy</a>		1					
<a href="#">box.size.x</a>	1				1		1
<a href="#">box.size.y</a>	1	1		1			1
<a href="#">box.size.z</a>		1					
<a href="#">cells.densities</a>		1					1
<a href="#">cells.sizes</a>		1					1
<a href="#">cells.temperatures</a>		1					1
<a href="#">cfl_factor</a>		1					
<a href="#">max_vare</a>		1					
<a href="#">max_vari</a>		1					
<a href="#">modules.heating</a>	1				1		1
<a href="#">modules.hydrodynamics</a>		1					
<a href="#">modules.radiation</a>	1				1		1
<a href="#">runtime.t_max</a>	1				1		1
<a href="#">runtime.timestep</a>	1				1		1
<a href="#">simulation.directory</a>	1					1	
<a href="#">simulation.name</a>		1					
<a href="#">simulation.precision</a>		1					

## Parameter nodes

### box.geometry

<a href="#">4478939648_FILE1:20   injected</a>		uint16
Value:	3	
Options:	1, 2, 3	
Description:	Type of grid geometry	

### box.size.vy

<a href="#">4478939648_FILE1:38</a>		float64
Value:	23.000	
Unit:	km/s	

### box.size.x

<a href="#">4478939648_FILE1:27</a>		float128
Unit:	cm	
Condition:	{?} > 0	
Description:	Box size in X direction	
<a href="#">settings:8   imported</a>		mod
Value:	10	
Unit:	nm	

### box.size.y

<a href="#">4478939648_FILE1:32</a>		float64
Unit:	cm	
Options:	3.0 cm, 4.0 cm	
Description:	Box size in Y direction	
<a href="#">4478939648_FILE1:37</a>		float64
Value:	34.000	
Unit:	au	
<a href="#">settings:9   imported</a>		mod
Value:	3e7	
Unit:	nm	

### box.size.z

<a href="#">4478939648_FILE1:43</a>		constant float64
Value:	23.000	
Unit:	cm	
Options:	10.0 m, 20.0 cm, 23.0 cm, 26.0 cm	
Description:	Box size in Z direction	

### cells.densities

cells:1   imported		float64
Value:	[0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0]	
Unit:	km/s	

### cells.sizes

cells:2   imported		int32
Value:	[10, 11, 12, 13, 14, 15, 16, 17, 18, 19]	
Unit:	cm	

### cells.temperatures

cells:3   imported		float64
Value:	[20.0, 21.0, 22.0, 23.0, 24.0, 25.0, 26.0, 27.0, 28.0, 29.0]	
Unit:	K	

### cfl\_factor

4478939648_STRING1:4		float64
Value:	0.700	

### max\_vare

4478939648_STRING1:5		float64
Value:	0.200	

### max\_vari

4478939648_STRING1:6		float64
Value:	0.200	

### modules.heating

4478939648_FILE1:57		bool
Tags:	preprocessor	
Description:	Switch on heating module	
settings:12   imported		mod
Value:	false	

### modules.hydrodynamics

4478939648_FILE1:54		bool
Value:	true	
Tags:	preprocessor	
Description:	Switch on hydrodynamics module	

### modules.radiation

4478939648_FILE1:60		bool
---------------------	--	------

Tags:	preprocessor
Description:	Switch on radiation module
<a href="#">settings:13   imported</a> mod	
Value:	true

#### runtime.t\_max

<a href="#">4478939648_FILE1:11</a> float64	
Unit:	s
Condition:	{?} > 0
Description:	Maximum simulation time
<a href="#">settings:2   imported</a> mod	
Value:	10
Unit:	ns

#### runtime.timestep

<a href="#">4478939648_FILE1:14</a> float64	
Unit:	s
Condition:	{?} < {?runtime.t_max} && {?} > 0
Description:	Simulation time step
<a href="#">settings:3   imported</a> mod	
Value:	0.01
Unit:	ns

#### simulation.directory

<a href="#">4478939648_FILE1:8   injected</a> mod	
---	--

#### simulation.name

<a href="#">4478939648_FILE1:4</a> str	
Value:	simulation
Format:	[a-zA-Z_-]+

#### simulation.precision

<a href="#">4478939648_FILE1:6</a> str	
Value:	double
Options:	double, float

# References

## Injected values

4478939648_FILE1:8	
Injecting node:	simulation.directory
Request:	{pahts?simulation.directory}
4478939648_FILE1:20	
Injecting node:	box.geometry
Request:	{settings?box.geometry}
From source:	settings:6
Value:	3

## Imported nodes

4478939648_FILE1:17		
Request:	{settings?runtime.*}	
Imported node:		From source:
runtime.t_max		settings:2
runtime.timestep		settings:3
4478939648_FILE1:49		
Request:	{settings?box.size.*}	
Imported node:		From source:
box.size.x		settings:8
box.size.y		settings:9
4478939648_FILE1:51		
Request:	{options?box.boundary.*}	
4478939648_FILE1:64		
Request:	{settings?modules.*}	
Imported node:		From source:
modules.heating		settings:12
modules.radiation		settings:13
4478939648_FILE1:67		
Request:	{cells?*}	
Imported node:		From source:
cells.densities		cells:1
cells.sizes		cells:2
cells.temperatures		cells:3



# Settings

## List of units

Name	Value	Units	Source
[velocity]	13	cm/s	<a href="#">4478939648_ROOT:30</a>
[length]	1	cm	<a href="#">4478939648_STRING1:1</a>
[mass]	2	g	<a href="#">4478939648_STRING1:2</a>

## List of sources

4478939648\_ROOT

File: test\_docs.py

4478939648\_STRING1

File: test\_docs.py

Source: [4478939648\\_ROOT:31](#)

```
1      $unit length = 1 cm
2      $unit mass = 2 g
3
4      cfl_factor float = 0.7 # Courant-Friedrichs-Lewy condition
5      max_vare float = 0.2  # maximum energy change of electrons
6      max_vari float = 0.2  # maximum energy change of ions
```

4478939648\_FILE1

File: definitions.dip

Source: [4478939648\\_ROOT:40](#)

```
1  $source settings = settings.dip
2
3  simulation
4      name str = "simulation"
5      !format "[a-zA-Z_-]+"
6      precision str = "double"
7      !options ["double","float"]
8      directory = {pahts?simulation.directory}
9
10 runtime
11     t_max float s # mandatory
12     !condition ("{?} > 0")
13     !description "Maximum simulation time"
14     timestep float s
15     !condition ("{?} < {?runtime.t_max} && {?} > 0") # mandatory
16     !description "Simulation time step"
17     {settings?runtime.*}
18
19 box
20     geometry uint16 = {settings?box.geometry} # mandatory
21     = 1 # linear
22     = 2 # cylindrical
23     = 3 # spherical
24     !description "Type of grid geometry"
25
26 size
27     x float128 cm # mandatory
28     !condition ("{?} > 0")
29     !description "Box size in X direction"
30     #y float cm # first declared here
31     @case ("{?box.geometry} == 2")
32         y float cm # mandatory if geometry is non-linear
33         = 3 cm
34         = 4 cm
35         !description "Box size in Y direction"
36     @case ("{?box.geometry} == 3")
37         y float = 34 au
38         vy float = 23 km/s
39     #@else
40     # y float = 3 m
41     @end
42     @case ("{?box.geometry} == 3")
43         z float = 23 cm # constant
44         = 10 m
45         !options [20,23,26] cm
46         !description "Box size in Z direction"
```

```

47         !constant
48     @end
49     {settings?box.size.*}
50     boundary
51     {options?box.boundary.*}
52
53     modules
54         hydrodynamics bool = true # optional
55         !description "Switch on hydrodynamics module"
56         !tags ["preprocessor"]
57         heating bool # mandatory
58         !description "Switch on heating module"
59         !tags ["preprocessor"]
60         radiation bool # mandatory
61         !description "Switch on radiation module"
62         !tags ["preprocessor"]
63
64     {settings?modules.*}
65
66     cells
67     {cells?*}

```

## cells

File: cells.dip

Source: [4478939648\\_ROOT:39](#)

```

1     densities float[10] = [0,1,2,3,4,5,6,7,8,9] km/s
2     sizes int[10] = [10,11,12,13,14,15,16,17,18,19] cm
3     temperatures float[10] = [20,21,22,23,24,25,26,27,28,29] K

```

## settings

File: settings.dip

Source: [4478939648\\_FILE1:1](#)

```

1     runtime
2         t_max = 10 ns
3         timestep = 0.01 ns
4
5     box
6         geometry = 3
7         size
8             x = 10 nm
9             y = 3e7 nm
10
11     modules
12         heating = false
13         radiation = true

```