

## 1 Variables

### 2 root

	var	symbol	documentation	type	units	tokens	eqs
5	$F$	<b>F</b>	incidence matrix of a directed graph	network		[]	
6	$t$	<b>t</b>	time	frame	$s$	[]	
7	$to$	<b>to</b>	starting time	frame	$s$	[]	4
8	$te$	<b>te</b>	end time	frame	$s$	[]	5
1	$value$	<b>value</b>	numerical value	constant		[]	
2	$zero$	<b>zero</b>	numerical value zero	constant		[]	1
3	$one$	<b>one</b>	numerical value one	constant		[]	2
4	$onehalf$	<b>onehalf</b>	numerical value one half	constant		[]	3

### 3 physical

	var	symbol	documentation	type	units	tokens	eqs
9	$r_{xN}$	<b>r_x</b>	x-coordinate	frame	$m$	[]	
10	$r_{yN}$	<b>r_y</b>	y-coordinate	frame	$m$	[]	
11	$U_N$	<b>U</b>	foundation state – internal energy	state	$kg\,m^2\,s^{-2}$	[]	
12	$S_N$	<b>S</b>	foundation state – entropy	state	$kg\,m^2\,K^{-1}\,s^{-2}$	[]	
13	$V_N$	<b>V</b>	foundation state – volume	state	$m^3$	[]	
14	$n$	<b>n</b>	foundation state – species mass	state		[]	

## 4 control

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 5 reactions

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 6 material

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 7 macroscopic

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 8 solid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 9 fluid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----



## 10 liquid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 11 gas

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 12 control-control

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 13 gas–liquid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 14 gas–gas

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 15 liquid–liquid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 16 gas-solid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 17 solid-solid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----



## 18 liquid–solid

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 19 material–material

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 20 reactions–reactions

	var	symbol	documentation	type	units	tokens	eqs
--	-----	--------	---------------	------	-------	--------	-----

## 21 Equations

## 22 Generic

no	equation	documentation	layer
1	$zero := \text{Instantiate}(value, value)$	numerical value zero	root
2	$one := \text{Instantiate}(value, value)$	numerical value one	root
3	$onehalf := \text{Instantiate}(value, value)$	numerical value one half	root
4	$to := \text{Instantiate}(t, value)$	starting time	root
5	$te := \text{Instantiate}(t, value)$	end time	root