1 Variables

2 root

	var	symbol	documentation	type	units	tokens	eqs
8	$F_{N,A}$	F	directed graph indicence matrix	network		[]	
1	t_N	t	time	frame	s	[]	
6	to_N	to	starting time	frame	s	[]	3
7	te_N	te	end time	frame	s	[]	4
3	$value$	value	numerical value	constant		[]	
4	one	one	numerical value 1	constant		[]	1
5	$null$	null	numerical value 0	constant		[]	2

3 System

	var	symbol	documentation	type	units	tokens	eqs
25	$\hat{x}^{A,\alpha}{}_N$	fx_A_alpha	netflow of token A due to mechanism alpha	transport	ms^{-1}	[]	11
26	$\hat{x}^{A,\beta}{}_N$	fx_A_beta	net flow of token A due to mechanism beta	transport	ms^{-1}	[]	12
27	$\hat{x}^{B,\gamma}{}_N$	fx_B_gamma	netflow of token B due to mechanism gamma	transport	s^{-1}	[]	14
28	$\hat{x}^{B,\delta}{}_N$	fx_B_delta	netflow of token B due to mechansim beta	transport	s^{-1}	[]	15
9	x_N	x	state token A	state	m	[]	20
10	y_N	y	state token B	state		[]	21
11	$x^o{}_N$	xo	initial condition for state x	state	m	[]	5
12	$y^o{}_N$	yo	initial condition for state y	state		[]	6
13	$K^{A,\alpha}{}_A$	K_A_alpha	conductivity token A mechanism alpha	constant	s^{-1}	[]	
14	$K^{A,\beta}{}_A$	K_A_beta	conductivity token A mechanism beta	constant	s^{-1}	[]	

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	var	symbol	documentation	type	units	tokens	eqs
15	$K^{B,\gamma}{}_A$	K_B_gamma	conductivity token B mechanism gamma	constant	s^{-1}	[]	
16	$K^{B,\delta}{}_A$	K_B_delta	conductivity token B mechanism delta	constant	s^{-1}	[]	
17	$M^{A,\alpha}{}_N$	M_A_alpha	norming factor token A mechanism alpha	constant		[]	
18	$M^{A,\beta}{}_N$	M_A_beta	norming factor token A mechanism beta	constant		[]	
19	$M^{B,\gamma}{}_N$	M_B_gamma	norming factor token B mechanism gamma	constant		[]	
20	$M^{B,\delta}{}_N$	M_B_delta	norming factor token B mechanism delta	constant		[]	
21	$\pi^{A,\alpha}{}_N$	pi_A_alpha	effort for A mechanism alpha	secondaryState	m	[]	7
22	$\pi^{A,\beta}{}_N$	pi_A_beta	effort for A mechanism beta	secondaryState	m	[]	8
23	$\pi^{B,\gamma}{}_N$	pi_B_gamma	effort for B mechanism gamma	secondaryState		[]	9
24	$\pi^{B,\delta}{}_N$	pi_B_delta	effort for B mechanism delta	secondaryState		[]	10
29	$\dot{x}_N$	dx	diferential balance for token A	differentialState	ms^{-1}	[]	16
30	$\dot{y}_N$	dy	differential balance for token B	differentialState	s^{-1}	[]	17

4 Properties

	var	symbol	documentation	type	units	tokens	eqs

5 Control

	var	symbol	documentation	type	units	tokens	eqs

6 System–Properties

	var	symbol	documentation	type	units	tokens	eqs

7 Properties–System

	var	symbol	documentation	type	units	tokens	eqs

8 System–Control

	var	symbol	documentation	type	units	tokens	eqs

9 Control–System

	var	symbol	documentation	type	units	tokens	eqs

10 Properties–Control

	var	symbol	documentation	type	units	tokens	eqs

11 Control–Properties

	var	symbol	documentation	type	units	tokens	eqs

12 Equations

12.1 Model equations

no	equation	documentation	layer
1	$one := \mathrm{Instantiate}(value, value)$	numerical value 1	root
2	$null := \mathrm{Instantiate}(value, value)$	numerical value 0	root
3	$to_N := \mathrm{Instantiate}(t_N, value)$	starting time	root
4	$te_N := \mathrm{Instantiate}(t_N, value)$	end time	root
5	$x^o{}_N := \mathrm{Instantiate}(x_N, value)$	initial condition for state x	System
6	$y^o{}_N := \mathrm{Instantiate}(y_N, value)$	initial condition for state y	System
7	$\pi^{A,\alpha}{}_N := M^{A,\alpha}{}_N \cdot x_N$	effort for B mechanism alpha	System
8	$\pi^{A,\beta}{}_N := M^{A,\beta}{}_N \cdot x_N$	effort for A mechanism beta	System
9	$\pi^{B,\gamma}{}_N := M^{B,\gamma}{}_N \cdot y_N$	effort for B mechanism gamma	System
10	$\pi^{B,\delta}{}_N := M^{B,\delta}{}_N \cdot y_N$	effort for B mechanism delta	System
11	$\hat{x}^{A,\alpha}{}_N := F_{N,A} \overset{A}{\star} \left(K^{A,\alpha}{}_A \cdot F_{N,A} \overset{N}{\star} \pi^{A,\alpha}{}_N \right)$	netflow of token A due to mechanism alpha	System
12	$\hat{x}^{A,\beta}{}_N := F_{N,A} \overset{A}{\star} \left(K^{A,\beta}{}_A \cdot F_{N,A} \overset{N}{\star} \pi^{A,\beta}{}_N \right)$	net flow of token A due to mechanism beta	System
14	$\hat{x}^{B,\gamma}{}_N := F_{N,A} \overset{A}{\star} \left(K^{B,\gamma}{}_A \cdot F_{N,A} \overset{N}{\star} \pi^{B,\gamma}{}_N \right)$	netflow of token B due to mechanism gamma	System
15	$\hat{x}^{B,\delta}{}_N := F_{N,A} \overset{A}{\star} \left(K^{B,\delta}{}_A \cdot F_{N,A} \overset{N}{\star} \pi^{B,\delta}{}_N \right)$	netflow of token B due to mechansim beta	System

no	equation	documentation	layer
16	$\dot{x}_N := \hat{x}^{A,\alpha}{}_N + \hat{x}^{A,\beta}{}_N$	diferential balance for token A	System
17	$\dot{y}_N := \hat{x}^{B,\gamma}{}_N + \hat{x}^{B,\delta}{}_N$	differential balance for token B	System
20	$x_N := \int_{to_N}^{te_N} \dot{x}_N \ d\,t_N + x^o{}_N$	state token A	System
21	$y_N := \int_{to_N}^{te_N} \dot{y}_N \ d\,t_N + y^o{}_N$	state token B	System