Structure of pHs RLC

Antoine Falaize[1] and Thomas Helie[2]

[1]Project-team S3*, , STMS, IRCAM-CNRS-UPMC (UMR 9912), , 1 Place Igor-Stravinsky, 75004 Paris, France
[2]Project-team S3†, , STMS, IRCAM-CNRS-UPMC (UMR 9912), , 1 Place Igor-Stravinsky, 75004 Paris, France

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1 System netlist

line	label	dictionary.component	nodes	parameters
ℓ_1	IN	electronics.source	('A', 'ref')	{ type voltage
ℓ_2	R1	electronics.resistor	('A', 'B')	{ R ('R1', 1000.0)
ℓ_3	L	electronics.inductor	('B', 'C')	{ L ('L', 0.05)
ℓ_4	C	electronics.capacitor	('C', 'ref')	{ C ('C', 2e-06)

$\dim(\mathbf{x}) = n_{\mathbf{x}} = 2$;
$\dim(\mathbf{w}) = n_{\mathbf{w}} = 0$;
$\dim(\mathbf{y}) = n_{\mathbf{y}} = 1$;
$\dim(\mathbf{p}) = n_{\mathbf{p}} = 0$;

2 System variables

State variable $\mathbf{x} = \begin{pmatrix} x_{\mathrm{L}} \\ x_{\mathrm{C}} \end{pmatrix}$;
Input $\mathbf{u} = \begin{pmatrix} u_{\mathrm{IN}} \end{pmatrix}$;

*http://s3.ircam.fr
†http://s3.ircam.fr

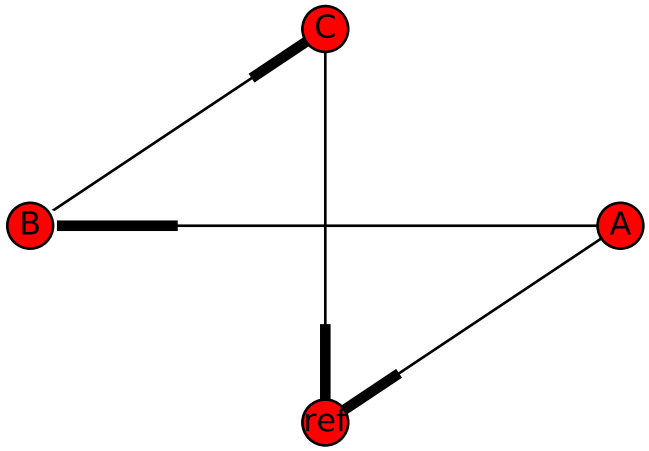

Figure 1: Graph of system `RLC`.

Output $\mathbf{y} = \begin{pmatrix} y_{\mathrm{IN}} \end{pmatrix}$;

3 Constitutive relations

Hamiltonian $\mathtt{H}(\mathbf{x}) = 250000.0 \cdot x_{\mathrm{C}}^2 + 10.0 \cdot x_{\mathrm{L}}^2$;
Hamiltonian gradient $\nabla\mathtt{H}(\mathbf{x}) = \begin{pmatrix} 20.0 \cdot x_{\mathrm{L}} \\ 500000.0 \cdot x_{\mathrm{C}} \end{pmatrix}$;

4 System parameters

4.1 Constant

parameter	value (SI)
C :	2e-06
R1 :	1000.0
L :	0.05

$$\mathbf{M} = \begin{pmatrix} -1000.0 & -1.0 & 1.0 \\ 1.0 & 0 & 0 \\ -1.0 & 0 & 0 \end{pmatrix};$$

$$\mathbf{J} = \begin{pmatrix} 0 & -1.0 & 1.0 \\ 1.0 & 0 & 0 \\ -1.0 & 0 & 0 \end{pmatrix};$$

$$\mathbf{R} = \begin{pmatrix} 1000.0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix};$$