Structure of pHs `DLC`

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June 10, 2016

1 System netlist

line	label	dictionary.component	nodes	parameters
ℓ_1	IN	electronics.source	('A', 'ref')	'type': 'voltage'
ℓ_2	D	electronics.diodepn	('A', 'B')	'v0': ('v0', 0.025), 'Is': ('Is', 1e-0
ℓ_3	C	electronics.capacitor	('B', 'ref')	'C': ('C', 2e-06)

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

2 System variables

State variable $\mathbf{x} = \left(\begin{array}{c} x_{\rm C} \end{array} \right)$;
Dissipation variable $\mathbf{w} = \left(\begin{array}{c} w_{\rm D} \end{array} \right)$;
Input $\mathbf{u} = \left(\begin{array}{c} u_{\rm IN} \end{array} \right)$;
Output $\mathbf{y} = \left(\begin{array}{c} y_{\rm IN} \end{array} \right)$;

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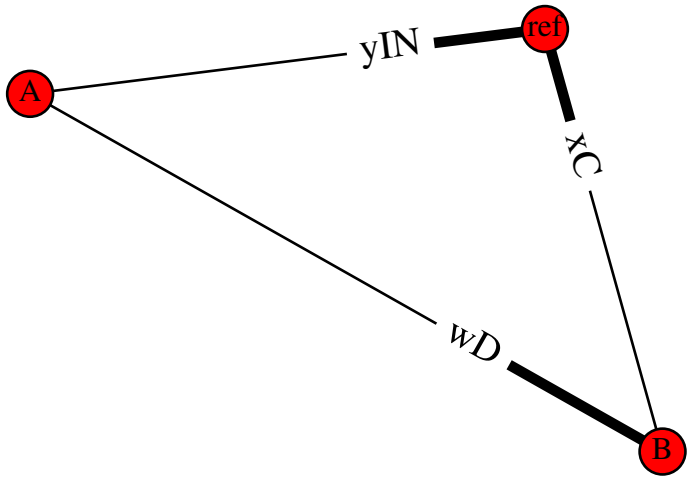

Figure 1: Graph of system DLC.

3 Constitutive relations

Hamiltonian $\mathtt{H}(\mathbf{x}) = \frac{0.5}{\mathrm{C}} \cdot x_{\mathrm{C}}^2$;
Hamiltonian gradient $\nabla \mathtt{H}(\mathbf{x}) = \left(\begin{array}{c} \frac{1.0}{\mathrm{C}} \cdot x_{\mathrm{C}} \end{array} \right)$;
Dissipation function $\mathbf{z}(\mathbf{w}) = \left(\begin{array}{c} \mathrm{Is} \cdot \left(e^{\frac{w_{\mathrm{D}}}{\mathrm{v0}}} - 1 \right) \end{array} \right)$;
Jacobian of dissipation function $\mathcal{J}_{\mathbf{z}}(\mathbf{w}) = \left(\begin{array}{c} \frac{\mathrm{Is}}{\mathrm{v0}} \cdot e^{\frac{w_{\mathrm{D}}}{\mathrm{v0}}} \end{array} \right)$;

4 System parameters

4.1 Constant

parameter	value (SI)
v0	0.025
Is	1e-09
C	2e-06

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