1 Variables

2 root

| | var | symbol | documentation | type | units | tokens | eqs |
|---|-----------|---------|------------------------------------|----------|-------|--------|-----|
| 1 | $F_{N,A}$ | F | incidence matrix of directed graph | network | | | |
| 2 | t_N | t | time | frame | s | | |
| 3 | to_N | to | initial time | frame | s | | 1 |
| 4 | te_N | te | end time | frame | s | | 2 |
| 5 | value | value | numerical value | constant | | | |
| 6 | onehalf | onehalf | numerical value $1/2$ | constant | | | 3 |
| 7 | null | null | numerical value 0 | constant | | | 4 |
| 8 | one | one | numerical value 1 | constant | | | 5 |

3 physical

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

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 | egs |
|-----|--------|---------------|--------|-------|--------|---------------|
| | -3 | | *J F * | | 1 | · · · · · · · |

7 macroscopic

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

8 solid

| var | symbol | documentation | type | units | tokens | eqs |
|-----|--------|---------------|------|-------|--------|-----|
| | v | | V 1 | | | |

9 fluid

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

10 liquid

| | **** | 11 | 1 | 4 | :4- | 4 - 1 | |
|--|------|--------|---------------|------|-------|--------|-----|
| | var | symbol | documentation | type | units | tokens | eqs |

11 gas

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

12 control—reactions

| | var | symbol | documentation | type | units | tokens | eqs | | | | | |
|----|------------------------|--------|---------------|------|-------|--------|-----|--|--|--|--|--|
| 13 | 13 reactions-control | | | | | | | | | | | |
| | var | symbol | documentation | type | units | tokens | eqs | | | | | |
| 14 | 14 control-material | | | | | | | | | | | |
| | var | symbol | documentation | type | units | tokens | eqs | | | | | |
| 15 | 15 material-control | | | | | | | | | | | |
| | var | symbol | documentation | type | units | tokens | eqs | | | | | |
| 16 | control-macro | scopic | | | | | | | | | | |
| | var | symbol | documentation | type | units | tokens | eqs | | | | | |
| 17 | 17 macroscopic-control | | | | | | | | | | | |
| | var | symbol | documentation | type | units | tokens | eqs | | | | | |

18 reactions—material

| var | symbol | documentation | type | units | tokens | eqs | | | | | |
|--------------------------|---|--|--|---|---|---------------------------|--|--|--|--|--|
| 19 material-reactions | | | | | | | | | | | |
| var | symbol | documentation | type | units | tokens | eqs | | | | | |
| 20 reactions-macroscopic | | | | | | | | | | | |
| var | symbol | documentation | type | units | tokens | eqs | | | | | |
| macroscopic-re | eactions | | | | | | | | | | |
| var | symbol | documentation | type | units | tokens | eqs | | | | | |
| material-macr | oscopic | | | | | | | | | | |
| var | symbol | documentation | type | units | tokens | eqs | | | | | |
| macroscopic-n | naterial | | | | | | | | | | |
| var | symbol | documentation | type | units | tokens | eqs | | | | | |
| | reactions—macroscopic—re var var var var var var var material—macr var material—macr | material—reactions var symbol var symbol macroscopic—reactions var symbol war symbol war symbol macroscopic—material | material—reactions var symbol documentation reactions—macroscopic var symbol documentation macroscopic—reactions var symbol documentation material—macroscopic var symbol documentation material—macroscopic var symbol documentation macroscopic—material | material—reactions var symbol documentation type reactions—macroscopic var symbol documentation type macroscopic—reactions var symbol documentation type material—macroscopic var symbol documentation type material—macroscopic var symbol documentation type | material-reactions var symbol documentation type units reactions-macroscopic var symbol documentation type units macroscopic-reactions var symbol documentation type units material-macroscopic var symbol documentation type units material-macroscopic var symbol documentation type units | material—reactions var | | | | | |

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

25 gas-solid

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

26 liquid-solid

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

27 Equations

27.1 Model equations

| no | equation | documentation | layer |
|----|------------------------------|-----------------------------|-------|
| 1 | $to_N := Set(t_N, t_N)$ | initial time | root |
| 2 | $te_N := Set(t_N, t_N)$ | end time | root |
| 3 | onehalf := Set(value, value) | numerical value $1/2$ | root |
| 4 | null := Set(value, value) | var doc : numerical value 0 | root |
| 5 | one := Set(value, value) | numerical value 1 | root |