

1 Matrizen

1.1 Ohne Klammern

$$\begin{array}{ccc} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{array} \quad (1)$$

1.2 Runde Klammern

$$\begin{pmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{pmatrix} \quad (2)$$

1.3 Eckige Klammern

$$\begin{bmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{bmatrix} \quad (3)$$

1.4 Geschweifte Klammern

$$\begin{Bmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{Bmatrix} \quad (4)$$

1.5 Betragsstriche

$$\left| \begin{array}{ccc} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{array} \right| \quad (5)$$

1.6 Doppelte Betragsstriche (Norm)

$$\left\| \begin{array}{ccc} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{array} \right\| \quad (6)$$

2 Matlab Quellcode

2.1 Was wird benötigt

Die Datei `mcode.sty` muss sich im selben Verzeichnis wie das Masterdokument befinden.

```
1 function [] = print_mdl(varargin)
2 % print_mdl()
3 %
4 % Syntax:
5 % print_mdl(Properties)
6 % print_mdl('PropertyName',PropertyValue,...)
7 %
8 % Argumente:
9 % 'system'          - Name des Simulink-Modells ...
                        (default = gcs)
10 % 'path'            - Ordner in dem die Grafik ...
                        gespeichert werden soll (default = aktueller Ordner)
11 % 'format'          - Format ...
                        (default = ...
                        'eps')
12 % 'tag'             - alle Subsystems mit 'tag' im Namen ...
                        werden gespeichert.
13 %                   Falls tag = 'all' werden alle ...
                        Subsysteme gespeichert.
14 %
15 % Beispiel:
16 % print_mdl('system','sldemo.househeat','format','eps');
17 %
18 % Notes:
19 % 1) System name must be given without extension, e.g. ...
   % 'MySystem'.
20 % 2) Output directory must exist
21 % 3) When output directory is '', current working ...
   % directory is used
22 % 4) Model is scanned recursively and goes under masks
23 % 5) When tag regexp is specified, only those of subsystems
24 %    which have property 'Tag' set to some non-empty ...
   % value matching
25 %    the regular expression are considered.
26 % 6) Root system is always printed.
27 % 7) Output filenames are generated in two ways:
28 %    a) When no regexp is used, it is full pathname of ...
   % the subsystem
29 %        within the model, with slashes replaced by ...
   % underscores.
30 %    b) With regexp specified, tag values are used as ...
   % filenames.
31 %    Cool After the printing, all subsystems are closed, ...
   % root remains open.
32 %
```

```

33 %      Written by
34 %      Tomas Hajek
35 %      tomas.hajek@st.com
36 %      2006
37 %      Changed
38 %      Thomas Lehmann
39 %      2012
40
41 default.system = gcs;
42 default.path = cd;
43 default.format = 'eps';
44 default.tag = '';
45
46 if numel(varargin) == 1          % struct wird übergeben
47     options = varargin{1};
48 else                             % PropertyName ...
49     PropertyValue pairs
49     param = {varargin{1:2:end}};
50     value = {varargin{2:2:end}};
51     options = cell2struct(value,param,2);
52 end
53
54 fn = fieldnames(options);
55 for l = 1:numel(fn)
56     default.(fn{l}) = options.(fn{l});
57 end
58 options = default;
59 f = ['-d',options.format];
60
61
62
63 % print the root system
64 open_system(options.system,'force');
65 print(f, ['-s' options.system], [options.path, '\', ...
66     strep(options.system, '/', '_')]);
67
68 if nargin < 4
69     return;
70 end
71
72 % print the subsystems
73 if strcmp(options.tag,'all')
74     % print all of them, using their names as output filenames
75     subsys=find_system(options.system, 'RegExp', 'On', ...
76         'LookUnderMasks', 'All', 'BlockType', 'SubSystem');
77     for i=1:length(subsys),
78         tag = subsys{i};
79         open_system(subsys{i},'force');
80
81         name_temp = ...
82             [options.path, '\',strep(strep(tag, '/', '_'),' ...
83                 ', ')];
84     try

```

```

82         print(f, ['-s' subsys{i}], name_temp);
83     catch
84         warning('MATLAB:cantprint', ['can not print ...
            ', name_temp]);
85     end
86     close_system(subsys{i});
87 end
88 else
89     % print only tagged ones, using the Tag values as ...
        output filenames
90     subsys=find_system(options.system, 'RegExp', 'On', ...
        'LookUnderMasks', 'All', 'BlockType', 'SubSystem', ...
        'Tag', options.tag);
91     for i=1:length(subsys),
92         tag = get_param(subsys{i}, 'Tag');
93         open_system(subsys{i}, 'force');
94         print(f, ['-s' subsys{i}], [options.path, '/', tag]);
95         close_system(subsys{i});
96     end
97 end
98
99 end

```

2.2 Quellen

- <http://www.mathworks.com/matlabcentral/fileexchange/8015-m-code-latex-package>

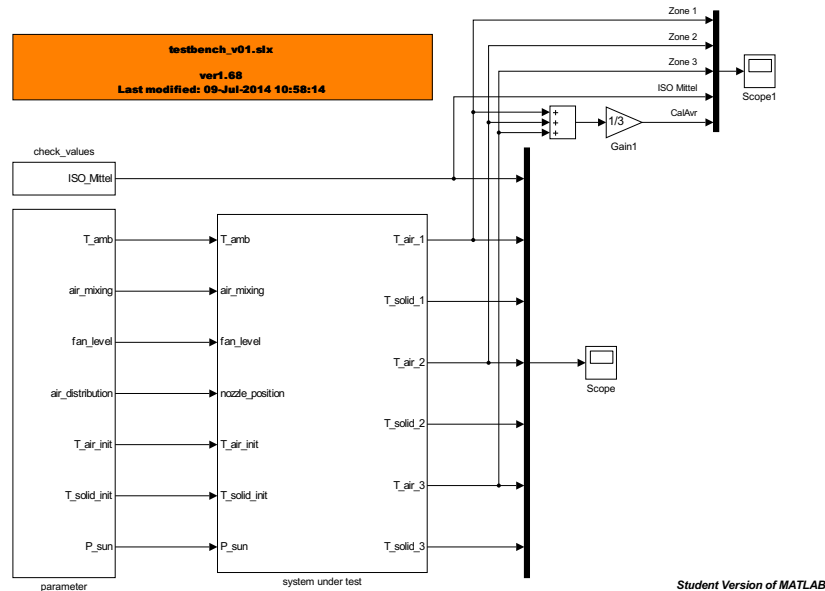


Abbildung 1: Simulink Modell waagrecht

3 Simulink Grafiken

3.1 Export Funktion

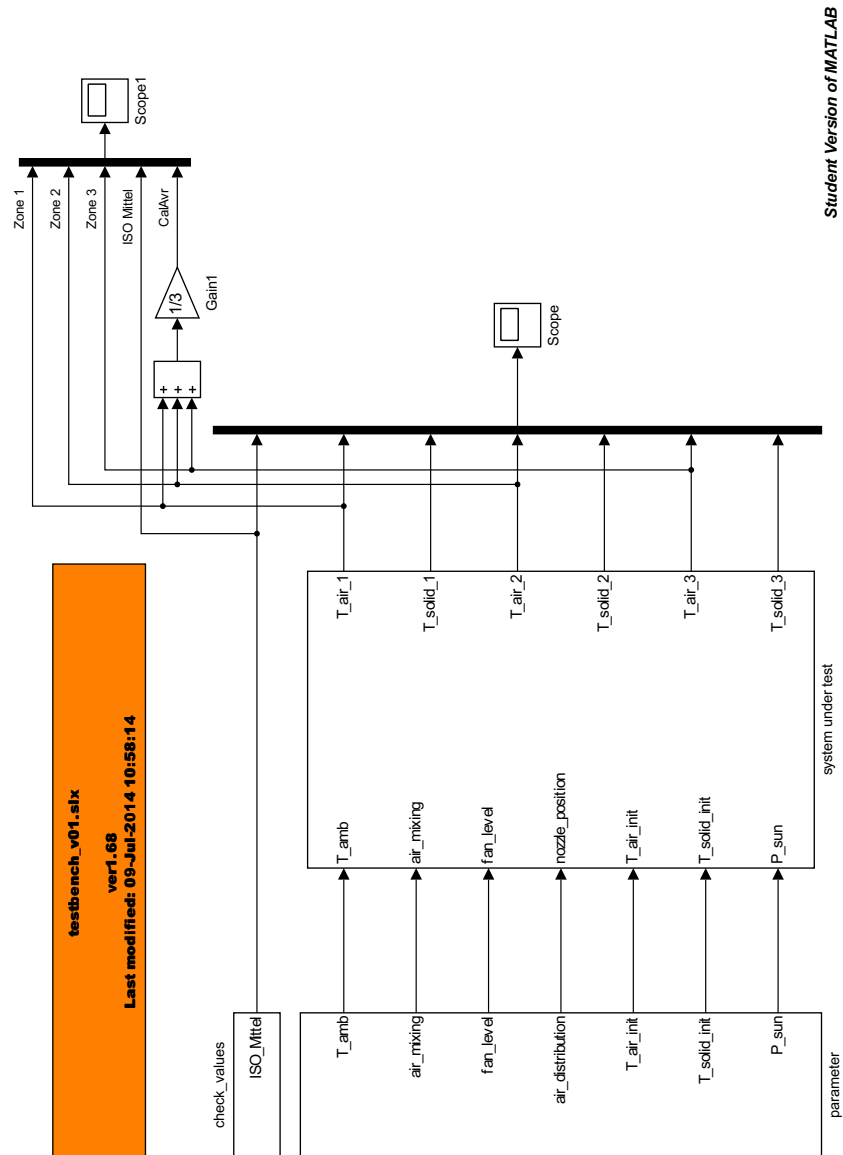
Über `print_mdl('system','testbench.v01','format','pdf');` können Simulink Modelle direkt in PDFs gewandelt werden.

3.2 Beispiel

Guggst du Grafik (Abbildung 1) auf Seite 5.

3.3 Gedreht

Dieselbe Grafik (Abbildung 2) gibt es auf Seite 6.



Student Version of MATLAB

Abbildung 2: Simulink Modell senkrecht