

stmmath package description

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v20191127

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2019-11-27

These are the math definitions for `stm latex` . It is build upon the `amsmath` package.

Contents

1. Commands	1
1.1. Operators	1
1.2. Symbols	1
2. Commands	1
3. Environments	2
A. The code	3
A.1. <code>stmmath.sty</code>	3

1. Commands

1.1. Operators

<code>\dev</code>	Deviatoric	<code>dev</code>
<code>\dif</code>	Infinitesimal differential	<code>d</code>
<code>\divergenceoperator</code>	Quantity of a vector field	<code>div</code>
<code>\erf</code>	Error function	<code>erf</code>
<code>\sign</code>	Signum function	<code>sign</code>
<code>\sph</code>	Spherical	<code>sph</code>
<code>\spur</code>	Trace	<code>Tr</code>
<code>\Grad</code>	Gradient w.r.t. material coordinates	<code>Grad</code>
<code>\grad</code>	Gradient w.r.t. spatial coordinates	<code>grad</code>

1.2. Symbols

`\minus`
`\curveplus`
`\rightplus`
`\upplus`

–
↪+
→+
↑+

2. Commands

There are additional commands available which require parameters. They are defined dependent of the symbols used in `stmglossaries`.

3. Environments

A. The code

A.1. stmmath.sty

```
1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 % Header %
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 %
5 % This is a interface to all stm tikz definitions
6 % Based upon the amsmath package:
7 %   https://ctan.org/pkg/amsmath
8 %
9 % Usage
10 % - Premble:
11 %   - \usepackage{stmmath}
12 %
13 % Revisions: 2019-10-27 Martin Raedel <martin.raedel@dlr.de>
14 %               Initial draft
15 %
16 % Contact:   Martin Raedel, martin.raedel@dlr.de
17 %               DLR Composite Structures and Adaptive Systems
18 %
19 %               __/|__
20 %               /_/_/_/_/
21 %               www.dlr.de/fa/en      || DLR
22 %
23 % Copyright (C) 2019-... DLR Composite Structures and
24 %               Adaptive Systems
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX
30 %   version 2e.
31 \NeedsTeXFormat{LaTeX2e}
32
33 % Provide the name of your page, the date it was last updated
34 %   , and a comment about what it's used for
35 \ProvidesPackage{stmmath}[2019/10/27 STMs custom LaTeX math
36 %   definitions]
37
38 % -----
39 % Package
```

```

37 % -----
38
39 % Load amsmath to defined math operators
40 \ifpackageloaded{amsmath}{}{\RequirePackage{amsmath}}%
41 \ifpackageloaded{amssymb}{}{\RequirePackage{amssymb}}%
42 \ifpackageloaded{graphicx}{}{\RequirePackage{graphicx}}%
43
44 % -----
45 % Modules
46 % -----
47
48 % Operators
49 \ifundefined{dev}{\DeclareMathOperator{\dev}{dev}}{}
50 \ifundefined{divergenceoperator}{\DeclareMathOperator{\divergenceoperator}{div}}{}
51 \ifundefined{erf}{\DeclareMathOperator{\erf}{erf}}{}
52 \ifundefined{sign}{\DeclareMathOperator{\sign}{sign}}{}
53 \ifundefined{sph}{\DeclareMathOperator{\sph}{sph}}{}
54 \ifundefined{spur}{\DeclareMathOperator{\spur}{Tr}}{}
55 \ifundefined{Grad}{\DeclareMathOperator{\Grad}{Grad}}{}%
    englisch gradient w.r.t material coordinates
56 \ifundefined{grad}{\DeclareMathOperator{\grad}{grad}}{}%
    englisch gradient w.r.t spatial coordinates
57
58 % -----
59 % Symbols
60 % -----
61
62 % Upright dif-symbol
63 \ifundefined{dif}{\newcommand*\dif{\mathop{\!}\!\mathrm{d}}}{}}{}
64
65 % shorter minus sign
66 \ifundefined{minus}{\newcommand{\minus}{\scalebox
    {0.75}[1.0]{\$-\$}}}{}}{}
67
68 % Symbols for static equilibrium conditions:
69 \newcommand*\curveplus{%
70   \mathbin{\!\rotatebox[origin=c]{90}{\$m@th\curvearrowleft\$}+}
71   %
72 }
73 \newcommand*\rightplus{%
74   \mathpalette\@rightplus\relax%
75 }

```

```

76
77 \newcommand*\@rightplus[1]{%
78   \mathbin{\vcenter{\hbox{$\m@th\overset{#1+}{\to}$}}}%
79 }
80
81 \newcommand*\upplus{%
82   \mathbin{+\mathord{\uparrow}}%
83 }
84
85 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
86 % That's it %
87 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
88
89 % Finally, we'll use \endinput to indicate that LaTeX can
   stop reading this file. LaTeX will ignore anything after
   this line.
90 \endinput

```