stmmath package description

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

Contents

1. Commands

1.1. Operators

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

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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
24 %
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 % Content                        %
27 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
28
29 % Declare that this style file requires at least LaTeX
      version 2e.
30 \NeedsTeXFormat{LaTeX2e}
31
32 % Provide the name of your page, the date it was last updated
    , and a comment about what it's used for
33 \ProvidesPackage{stmmath}[2019/10/27 STMs custom LaTeX math
    definitions]
34
35 % --------------------------
36 % Package
```

```latex
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  % Oeprators
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  }
```

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```latex
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
```