stmmath package description

v20191208

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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

1.2. Symbols

`\minus`	$-$
`\curveplus`	$\curvearrowright +$
`\rightplus`	$\overset{+}{\rightarrow}$
`\upplus`	$+\uparrow$

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

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Header                           %
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%
% This is a interface to all stm tikz definitions
% Based upon the amsmath package:
%   https://ctan.org/pkg/amsmath
%
% Usage
%  - Premble:
%     - \usepackage{stmmath}
%
% Revisions: 2019-10-27 Martin Raedel <martin.raedel@dlr.de>
%                       Initial draft
%
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%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Content                          %
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% Declare that this style file requires at least LaTeX version 2e.
\NeedsTeXFormat{LaTeX2e}

% Provide the name of your page, the date it was last updated, and a comment about what it's used for
\ProvidesPackage{stmmath}[2019/10/27 STMs custom LaTeX math definitions]

% ----------------------------
% Package
```

```
% ----------------------------

% Load amsmath to defined math operators
\@ifpackageloaded{amsmath}{}{\RequirePackage{amsmath}}%
\@ifpackageloaded{amssymb}{}{\RequirePackage{amssymb}}%
\@ifpackageloaded{graphicx}{}{\RequirePackage{graphicx}}%

% ----------------------------
% Modules
% ----------------------------

% Oeprators
\@ifundefined{dev}{\DeclareMathOperator{\dev}{dev}}{}
\@ifundefined{divergenceoperator}{\DeclareMathOperator{\
    divergenceoperator}{div}}{}
\@ifundefined{erf}{\DeclareMathOperator{\erf}{erf}}{}
\@ifundefined{sign}{\DeclareMathOperator{\sign}{sign}}{}
\@ifundefined{sph}{\DeclareMathOperator{\sph}{sph}}{}
\@ifundefined{spur}{\DeclareMathOperator{\spur}{Tr}}{}
\@ifundefined{Grad}{\DeclareMathOperator{\Grad}{Grad}}{}%
    englisch gradient w.r.t material coordinates
\@ifundefined{grad}{\DeclareMathOperator{\grad}{grad}}{}%
    englisch gradient w.r.t spatial coordinates

% ----------------------------
% Symbols
% ----------------------------

% Upright dif-symbol
\@ifundefined{dif}{\newcommand*\dif{\mathop{}\!\mathrm{d}}}{}

% shorter minus sign
\@ifundefined{minus}{\newcommand{\minus}{\scalebox
    {0.75}[1.0]{$-$}}}{}

% Symbols for static equilibrium conditions:
\newcommand*\curveplus{%
  \mathbin{\rotatebox[origin=c]{90}{$\m@th\curvearrowleft$}+}
     %
}

\newcommand*\rightplus{%
  \mathpalette\@rightplus\relax%
}
```

```
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
```