LaTeX Physics Package in MathJax
Mimicking Some of the Commands in LaTeX Physics Package

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Contents

1 LaTeX Physics Package

This extension is to mimics LaTeX Physics Package[1] in MathJax.

2 Commands not Working and Helps Needed

The following commands in the Physics Package is not implemented yet:

- All Matrix Macros
- So far everything done here is by string substitution. Whenever commands involving the following cannot be done simply by string substitution and hence not working:
    1. `*` modified command
    2. `[]` modified command
    3. variable no. of arguments

[1] http://www.ctan.org/pkg/physics

4. `()`, `[]` are used instead of `{}`

- Examples of commands that doesn't work:
  - `\dv`: has properties 1–3
  - `\qty`: has property 4

As I mentioned, everything done so far is by string substitution only. If you know more about Javascript and MathJax, and want to use the LaTeX Physics Package[2] in MathJax, please consider contributing. Some hints are given in Pull Request#16—MathJax-third-party-extensions[3] but I am too stupid to understand how the above cases should be handled.

3 Organization

`physics.xlsx` is the master file[4].

- Columns A-L are copied to test/tables.md
- Columns M-V are copied to unpacked/physics.js
- Columns M-V excluding column O are copied to test/macro.js

Other files are built automatically by `physics.sh`. MultiMarkdown[5], UglifyJS2, LaTeX are assumed. I used it on Mac and have no idea if the way my bash script is written is OS agnostic or not.

4 Test

A test is given in index.html and index.pdf. Compare the LaTeX output and HTML output and you will see which one is working or not.

Instead of extension, it can works as a macro too. See the test in macro.html[6].

[2] http://www.ctan.org/pkg/physics

[3] https://github.com/mathjax/MathJax-third-party-extensions/pull/16

[4] If you are laughing right now, you should really consider contributing. See [Commands not Working/Included][].

[5] http://fletcherpenney.net/multimarkdown/download/

[6] test/macro.html

Automatic Bracing	Code
$\{a\}$	`\quantity{ }`
$\{a\}$	`\qty{ }`
(a)	`\pqty{ }`
$[a]$	`\bqty{ }`
$\lvert a\rvert$	`\vqty{ }`
$\{a\}$	`\Bqty{ }`
$\lvert a\rvert$	`\absolutevalue{ }`
$\lvert a\rvert$	`\abs{ }`
$\lVert a\rVert$	`\norm{ }`
$a\Big\rvert_1^2$	`\evaluated{ }_1^2`
$a\Big\rvert_1^2$	`\eval{ }_1^2`
$\mathcal{O}(x)$	`\order{ }`
$[A, B]$	`\commutator{A} {B}`
$[A, B]$	`\comm{A} {B}`
$\{A, B\}$	`\anticommutator{A} {B}`
$\{A, B\}$	`\acomm{A} {B}`
$\{A, B\}$	`\poissonbracket{A} {B}`
$\{A, B\}$	`\pb{A} {B}`

Vector Notation	Code
$\mathbf{a}$	`\vectorbold{ }`
$\mathbf{a}$	`\vb{ }`
ψ	`\vb{ }`
$\boldsymbol{a}$	`\vb*{ }`
$\boldsymbol{\psi}$	`\vb*{ }`
$\vec{\mathbf{a}}$	`\vectorarrow{ }`
$\vec{\mathbf{a}}$	`\va{ }`
$\vec{\psi}$	`\va{ }`
$\vec{\boldsymbol{a}}$	`\va*{ }`
$\vec{\boldsymbol{\psi}}$	`\va*{ }`
$\hat{\mathbf{a}}$	`\vectorunit{ }`
$\hat{\mathbf{a}}$	`\vu{ }`
$\hat{\psi}$	`\vu{ }`
$\hat{\boldsymbol{a}}$	`\vu*{ }`
$\hat{\boldsymbol{\psi}}$	`\vu*{ }`
$\cdot$	`\dotproduct`
$\cdot$	`\vdot`
$\times$	`\crossproduct`
$\times$	`\cross`
$\times$	`\cp`
$\boldsymbol{\nabla}(\psi)$	`\gradient( )`
$\boldsymbol{\nabla}(\psi)$	`\grad( )`
$\boldsymbol{\nabla}[\psi]$	`\grad[ ]`
$\boldsymbol{\nabla}\psi$	`\grad{ }`
$\boldsymbol{\nabla}\cdot(\psi)$	`\divergence( )`
$\boldsymbol{\nabla}\cdot(\psi)$	`\div( )`
$\boldsymbol{\nabla}\cdot[\psi]$	`\div[ ]`
$\boldsymbol{\nabla}\cdot\psi$	`\div{ }`
$\boldsymbol{\nabla}\times(\psi)$	`\curl( )`
$\boldsymbol{\nabla}\times[\psi]$	`\curl[ ]`
$\boldsymbol{\nabla}\times\psi$	`\curl{ }`
$\nabla^2(\psi)$	`\laplacian( )`
$\nabla^2[\psi]$	`\laplacian[ ]`
$\nabla^2\psi$	`\laplacian{ }`

Operators	Code
$\sin x$	`\sin`
$\sin(x)$	`\sin( )`
$\sin^2(x)$	`\sin[2]( )`
$\operatorname{tr}\rho$	`\tr`
$\operatorname{Tr}\rho$	`\Tr`
$\operatorname{rank} M$	`\rank`
$\operatorname{erf}(x)$	`\erf( )`
$\operatorname{Res}[f(z)]$	`\Res[ ]`
$\mathcal{P}\int f(z)\,\mathrm{d}z$	`\principalvalue{ }`
$\mathcal{P}\int f(z)\,\mathrm{d}z$	`\pv{ }`
$\mathrm{P.V.}\int f(z)\,\mathrm{d}z$	`\PV{ }`
$\operatorname{Re}\{z\}$	`\Re{ }`
$\operatorname{Im}\{z\}$	`\Im{ }`

Quick Quad Text	Code
some texts	`\qqtext{ }`
some texts	`\qq{ }`
some texts	`\qq*{ }`
,	`\qcomma`
,	`\qc`
c.c.	`\qcc`
if	`\qif`
then	`\qthen`
else	`\qelse`
otherwise	`\qotherwise`
unless	`\qunless`
given	`\qgiven`
using	`\qusing`
assume	`\qassume`
since	`\qsince`
let	`\qlet`
for	`\qfor`
all	`\qall`
even	`\qeven`
odd	`\qodd`
integer	`\qinteger`
and	`\qand`
or	`\qor`
as	`\qas`
in	`\qin`

Derivatives	Code
$\mathrm{d}x$	`\differential{ }`
$\mathrm{d}x$	`\dd{ }`
d^3x	`\dd[3] {x}`
$\mathrm{d}(\cos\theta)$	`\dd( )`
$\frac{\mathrm{d}}{\mathrm{d}x}$	`\dv{ }`
$\frac{\mathrm{d}f}{\mathrm{d}x}$	`\derivative{ }{x}`
$\frac{\mathrm{d}f}{\mathrm{d}x}$	`\dv{ }{x}`
$\frac{\mathrm{d}^n f}{\mathrm{d}x^n}$	`\dv[ ]{f}{x}`
$\frac{\mathrm{d}}{\mathrm{d}x}\left(x^2+x^3\right)$	`\dv{x}( )`
$\mathrm{d}f/\mathrm{d}x$	`\dv*{ }{x}`
$\frac{\partial}{\partial x}$	`\pdv{ }`
$\frac{\partial f}{\partial x}$	`\partialderivative{ }{x}`
$\frac{\partial f}{\partial x}$	`\pdv{ }{x}`
$\frac{\partial^n f}{\partial x^n}$	`\pdv[ ]{f}{x}`
$\frac{\partial}{\partial x}\left(x^2+x^3\right)$	`\pdv{x}( )`
$\frac{\partial^2 f}{\partial x \partial y}$	`\pdv{ }{x}{y}`
$\delta F[g(x)]$	`\variation{ }`
$\delta F[g(x)]$	`\var{ }`
$\delta(E-TS)$	`\var( )`
$\frac{\delta}{\delta g}$	`\fdv{ }`
$\frac{\delta F}{\delta g}$	`\functionalderivative{ }{g}`
$\frac{\delta F}{\delta g}$	`\fdv{ }{g}`
$\frac{\delta}{\delta V}(E-TS)$	`\fdv{V}( )`
$\delta F/\delta x$	`\fdv*{ }{x}`

Dirac Bracket Notation	Code
$\lvert\psi\rangle$	`\ket{ }`
$\lvert\psi\rangle$	`\ket*{ }`
$\langle\psi\rvert$	`\bra{ }`
$\langle\psi\rvert$	`\bra*{ }`
$\langle a\vert b\rangle$	`\innerproduct{a}{b}`
$\langle a\vert b\rangle$	`\braket{a}{b}`
$\langle a\vert b\rangle$	`\braket*{a}{b}`
$\langle\psi\vert\psi\rangle$	`\braket{ }`
$\lvert a\rangle\langle b\rvert$	`\outerproduct{a}{b}`
$\lvert a\rangle\langle b\rvert$	`\dyad{a}{b}`
$\lvert a\rangle\langle b\rvert$	`\ketbra{a}{b}`
$\lvert a\rangle\langle b\rvert$	`\op{a}{b}`
$\lvert a\rangle\langle b\rvert$	`\ketbra*{a}{b}`
$\lvert\psi\rangle\langle\psi\rvert$	`\ketbra{ }`
$\langle\psi\rangle$	`\expectationvalue{ }`
$\langle\psi\rangle$	`\expval{ }`
$\langle\psi\rangle$	`\ev{ }`
$\langle\psi\vert A\vert\psi\rangle$	`\ev{ }{\psi}`
$\langle\psi\rangle$	`\ev*{ }`
$\langle\psi\rangle$	`\ev**{ }`
$\langle m\vert A\vert n\rangle$	`\matrixelement{m}{ }{n}`
$\langle m\vert A\vert n\rangle$	`\matrixel{m}{ }{n}`
$\langle m\vert A\vert n\rangle$	`\mel{m}{ }{n}`
$\langle m\vert A\vert n\rangle$	`\mel*{m}{ }{n}`
$\langle m\vert A\vert n\rangle$	`\mel**{m}{ }{n}`