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

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April 12, 2016

Contents

1 LaTeX Physics Package

This extension is to mimics the LaTeX Physics Package[1] in MathJax. For details, see the GitHub pages[2] and the GitHub repository[3] of this extension.

2 Some Commands are not Working

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

[1] http://www.ctan.org/pkg/physics
[2] https://ickc.github.io/MathJax-third-party-extensions/physics/
[3] https://github.com/ickc/MathJax-third-party-extensions

2. `[]` (or `()`) is involved
3. variable no. of arguments

- Examples of commands that doesn't work: `\dv`: has all the properties mentioned above

As I mentioned, everything done so far is by string substitution only. Some hints are given in Pull Request#16—MathJax-third-party-extensions[4] but my skill is too limited to understand how the above cases should be handled. Feel free to improve it though.

3 Organization

`physics.xlsx` is the master file.

- 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

`License.js` is used to store the license that should be appended to the `.js` files.

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[6][7] and index.pdf[9]. 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[10].

[4] https://github.com/mathjax/MathJax-third-party-extensions/pull/16
[5] http://fletcherpenney.net/multimarkdown/download/
[6] https://ickc.github.io/MathJax-third-party-extensions/physics/
[7] This relies on the CDN of MathJax. i.e. there will be a delay. To see instantaneous test, use macro.html[8].
[9] https://ickc.github.io/MathJax-third-party-extensions/physics/index.pdf
[10] https://ickc.github.io/MathJax-third-party-extensions/physics/test/macro.html

Automatic Bracing	Code
$\left\{\frac{1}{1+\frac{1}{2}}\right\}$	`\quantity{ }`
$\left\{\frac{1}{1+\frac{1}{2}}\right\}$	`\qty{ }`
$\left(\frac{1}{1+\frac{1}{2}}\right)$	`\pqty{ }`
$\left[\frac{1}{1+\frac{1}{2}}\right]$	`\bqty{ }`
$\left\vert\frac{1}{1+\frac{1}{2}}\right\vert$	`\vqty{ }`
$\left\{\frac{1}{1+\frac{1}{2}}\right\}$	`\Bqty{ }`
$\left\vert\frac{1}{1+\frac{1}{2}}\right\vert$	`\absolutevalue{ }`
$\left\vert\frac{1}{1+\frac{1}{2}}\right\vert$	`\abs{ }`
$\left\Vert\frac{1}{1+\frac{1}{2}}\right\Vert$	`\norm{ }`
$\left.\frac{1}{1+\frac{1}{2}}\right\vert_{1}^{2}$	`\evaluated{ }_1^2`
$\left.\frac{1}{1+\frac{1}{2}}\right\vert_{1}^{2}$	`\eval{ }_1^2`
$\mathcal{O}\left(\frac{x}{2}\right)$	`\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{ }`
$\operatorname{Re}\left\{\frac{1}{1+\frac{i}{2}}\right\}$	`\Re{ }`
$\operatorname{Im}\left\{\frac{1}{1+\frac{i}{2}}\right\}$	`\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
$\left\vert\frac{\psi+\phi}{2}\right\rangle$	`\ket{ }`
$\vert\frac{\psi+\phi}{2}\rangle$	`\ket*{ }`
$\left\langle\frac{\psi+\phi}{2}\right\vert$	`\bra{ }`
$\langle\frac{\psi+\phi}{2}\vert$	`\bra*{ }`
$\left\langle\frac{\psi+\phi}{2}\middle\vert\frac{\psi+\phi}{2}\right\rangle$	`\innerproduct{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\left\langle\frac{\psi+\phi}{2}\middle\vert\frac{\psi+\phi}{2}\right\rangle$	`\braket{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\langle\frac{\psi+\phi}{2}\vert\frac{\psi+\phi}{2}\rangle$	`\braket*{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\left\langle\frac{\psi+\phi}{2}\middle\vert\frac{\psi+\phi}{2}\right\rangle$	`\braket{ }`
$\left\vert\frac{\psi+\phi}{2}\right\rangle\!\left\langle\frac{\psi+\phi}{2}\right\vert$	`\outerproduct{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\left\vert\frac{\psi+\phi}{2}\right\rangle\!\left\langle\frac{\psi+\phi}{2}\right\vert$	`\dyad{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\left\vert\frac{\psi+\phi}{2}\right\rangle\!\left\langle\frac{\psi+\phi}{2}\right\vert$	`\ketbra{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\left\vert\frac{\psi+\phi}{2}\right\rangle\!\left\langle\frac{\psi+\phi}{2}\right\vert$	`\op{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\vert\frac{\psi+\phi}{2}\rangle\!\langle\frac{\psi+\phi}{2}\vert$	`\ketbra*{\frac{\psi + \phi}{2}}{\frac{\psi + \phi}{2}}`
$\left\vert\frac{\psi+\phi}{2}\right\rangle\!\left\langle\frac{\psi+\phi}{2}\right\vert$	`\ketbra{ }`
$\left\langle\frac{\psi+\phi}{2}\right\rangle$	`\expectationvalue{ }`
$\left\langle\frac{\psi+\phi}{2}\right\rangle$	`\expval{ }`
$\left\langle\frac{\psi+\phi}{2}\right\rangle$	`\ev{ }`
$\langle\psi\vert\frac{A+B}{2}\vert\psi\rangle$	`\ev{ }{\psi}`
$\langle\frac{\psi+\phi}{2}\rangle$	`\ev*{ }`
$\langle\frac{\psi+\phi}{2}\rangle$	`\ev**{ }`
$\langle m\vert\frac{A+B}{2}\vert n\rangle$	`\matrixelement{m}{ }{n}`
$\langle m\vert\frac{A+B}{2}\vert n\rangle$	`\matrixel{m}{ }{n}`
$\langle m\vert\frac{A+B}{2}\vert n\rangle$	`\mel{m}{ }{n}`
$\langle m\vert\frac{A+B}{2}\vert n\rangle$	`\mel*{m}{ }{n}`
$\left\langle m\middle\vert\frac{A+B}{2}\middle\vert n\right\rangle$	`\mel**{m}{ }{n}`