1 List of commands

1.1 Automatic bracing

<table>
<tr><td>\quantity</td><td>\qty(\typical) $\to (A)$</td><td>automatic ( ) braces</td></tr>
<tr><td></td><td>\qty(\tall) $\to \left(A_x^{x^x}\right)$</td><td></td></tr>
<tr><td></td><td>\qty(\grande) $\to \left(\frac{1}{xx}\right)$</td><td></td></tr>
<tr><td></td><td>\qty[\typical] $\to [A]$</td><td>automatic [ ] braces</td></tr>
<tr><td></td><td>\qty|\typical| $\to \lvert A\rvert$</td><td>automatic | | braces</td></tr>
<tr><td></td><td>\qty{\typical} $\to \{A\}$</td><td>automatic { } braces</td></tr>
<tr><td></td><td>\qty\big{} $\to \big\{\big\}$</td><td>manual sizing (works with any of the above bracket types)</td></tr>
<tr><td></td><td>\qty\Big{} $\to \Big\{\Big\}$</td><td></td></tr>
<tr><td></td><td>\qty\bigg{} $\to \bigg\{\bigg\}$</td><td></td></tr>
<tr><td></td><td>\qty\Bigg{} $\to \Bigg\{\Bigg\}$</td><td></td></tr>
<tr><td></td><td>\pqty{} $\leftrightarrow$ \qty()</td><td>alternative syntax; robust and more LaTeX-friendly</td></tr>
<tr><td></td><td>\bqty{} $\leftrightarrow$ \qty[]</td><td></td></tr>
<tr><td></td><td>\vqty{} $\leftrightarrow$ \qty||</td><td></td></tr>
<tr><td></td><td>\Bqty{} $\leftrightarrow$ \qty{}</td><td></td></tr>
<tr><td>\absolutevalue</td><td>\abs{a} $\to \lvert a\rvert$</td><td>automatic sizing; equivalent to \qty|a|</td></tr>
<tr><td></td><td>\abs\Big{a} $\to \Big\lvert a\Big\rvert$</td><td>inherits manual sizing syntax from \qty</td></tr>
<tr><td></td><td>\abs*{\grande} $\to \lvert\frac{1}{xx}\rvert\frac{1}{xx}$</td><td>star for no resize</td></tr>
<tr><td>\norm</td><td>\norm{a} $\to \lVert a\rVert$</td><td>automatic sizing</td></tr>
<tr><td></td><td>\norm\Big{a} $\to \Big\lVert a\Big\rVert$</td><td>manual sizing</td></tr>
<tr><td></td><td>\norm*{\grande} $\to \lVert\frac{1}{xx}\rVert\frac{1}{xx}$</td><td>star for no resize</td></tr>
<tr><td>\evaluated</td><td>\eval{x}_0^\infty $\to x\int\Big\rvert_0^\infty$</td><td>vertical bar for evaluation limits</td></tr>
<tr><td></td><td>\eval(x|_0^\infty $\to \left(x\int\right\rvert_0^\infty$</td><td>alternate form</td></tr>
<tr><td></td><td>\eval[x|_0^\infty $\to \left[x\int\right\rvert_0^\infty$</td><td>alternate form</td></tr>
<tr><td></td><td>\eval[\venti|_0^\infty $\to \left[\sum_x^x\int\right\rvert_0^\infty$</td><td>automatic sizing</td></tr>
<tr><td></td><td>\eval*[\venti|_0^\infty $\to \sum_x^x\left[\sum_x^x\int\right\rvert_0^\infty$</td><td>star for no resize</td></tr>
<tr><td>\order</td><td>\order{x^2} $\to \mathcal{O}\left(x^2\right)$</td><td>order symbol; automatic sizing and space handling</td></tr>
<tr><td></td><td>\order\Big{x^2} $\to \mathcal{O}\Big(x^2\Big)$</td><td>manual sizing</td></tr>
<tr><td></td><td>\order*{\grande} $\to \mathcal{O}(\frac{1}{xx})\frac{1}{xx}$</td><td>star for no resize</td></tr>
<tr><td>\commutator</td><td>\comm{A}{B} $\to [A,B]$</td><td>automatic sizing</td></tr>
<tr><td></td><td>\comm\Big{A}{B} $\to \Big[A,B\Big]$</td><td>manual sizing</td></tr>
</table>

	`\comm*{A}{\grande}` $\rightarrow [A, \frac{1}{xx}]\, A, \frac{1}{xx}$	star for no resize
`\anticommutator`	`\acomm{A}{B}` $\rightarrow \{A, B\}$	same as `\poissonbracket`
`\poissonbracket`	`\pb{A}{B}` $\rightarrow \{A, B\}$	same as `\anticommutator`

1.2 Vector notation

`\vectorbold`	`\vb{a}` $\rightarrow \mathbf{a}$	upright/no Greek
	`\vb*{a}`, `\vb*{\theta}` $\rightarrow \boldsymbol{a}, \boldsymbol{\theta}$	italic/Greek
`\vectorarrow`	`\va{a}` $\rightarrow \vec{\mathbf{a}}$	upright/no Greek
	`\va*{a}`, `\va*{\theta}` $\rightarrow \vec{\boldsymbol{a}}, \vec{\boldsymbol{\theta}}$	italic/Greek
`\vectorunit`	`\vu{a}` $\rightarrow \hat{\mathbf{a}}$	upright/no Greek
	`\vu*{a}`, `\vu*{\theta}` $\rightarrow \hat{\boldsymbol{a}}, \hat{\boldsymbol{\theta}}$	italic/Greek
`\dotproduct`	`\vdot` $\rightarrow \cdot$ as in $\mathbf{a} \cdot \mathbf{b}$	note: `\dp` is a protected TEX primitive
`\crossproduct`	`\cross` $\rightarrow \times$ as in $\mathbf{a} \times \mathbf{b}$	alternate name
	`\cp` $\rightarrow \times$ as in $\mathbf{a} \times \mathbf{b}$	shorthand name
`\gradient`	`\grad` $\rightarrow \boldsymbol{\nabla}$	
	`\grad{\Psi}` $\rightarrow \boldsymbol{\nabla}\Psi$	default mode
	`\grad(\Psi+\tall)` $\rightarrow \boldsymbol{\nabla}\left(\Psi + A_x^{x^x}\right)$	long-form (like `\qty` but also handles spacing)
	`\grad[\Psi+\tall]` $\rightarrow \boldsymbol{\nabla}\left[\Psi + A_x^{x^x}\right]$	
`\divergence`	`\div` $\rightarrow \boldsymbol{\nabla}\cdot$	note: `amsmath` symbol $\div$ renamed `\divisionsymbol`
	`\div{\vb{a}}` $\rightarrow \boldsymbol{\nabla} \cdot \mathbf{a}$	default mode
	`\div(\vb{a}+\tall)` $\rightarrow \boldsymbol{\nabla} \cdot \left(\mathbf{a} + A_x^{x^x}\right)$	long-form
	`\div[\vb{a}+\tall]` $\rightarrow \boldsymbol{\nabla} \cdot \left[\mathbf{a} + A_x^{x^x}\right]$	
`\curl`	`\curl` $\rightarrow \boldsymbol{\nabla}\times$	
	`\curl{\vb{a}}` $\rightarrow \boldsymbol{\nabla} \times \mathbf{a}$	default mode
	`\curl(\vb{a}+\tall)` $\rightarrow \boldsymbol{\nabla} \times \left(\mathbf{a} + A_x^{x^x}\right)$	long-form
	`\curl[\vb{a}+\tall]` $\rightarrow \boldsymbol{\nabla} \times \left[\mathbf{a} + A_x^{x^x}\right]$	
`\laplacian`	`\laplacian` $\rightarrow \nabla^2$	
	`\laplacian{\Psi}` $\rightarrow \nabla^2\Psi$	default mode
	`\laplacian(\Psi+\tall)` $\rightarrow \nabla^2\left(\Psi + A_x^{x^x}\right)$	long-form
	`\laplacian[\Psi+\tall]` $\rightarrow \nabla^2\left[\Psi + A_x^{x^x}\right]$	

1.3 Operators

Example trig redefinitions:

`\sin`	`\sin(\grande)` $\rightarrow \sin\left(\frac{1}{xx}\right)$	automatic braces; old `\sin` renamed `\sine`
	`\sin[2](x)` $\rightarrow \sin^2(x)$	optional power
	`\sin x` $\rightarrow \sin x$	can still use without an argument

But

$$\sin[\frac{1}{xx}] \qquad \sin[x][\frac{1}{xx}] \qquad \sin[x]\frac{1}{xx} \qquad \sin\{\frac{1}{xx}\} \qquad \sin[x]\{\frac{1}{xx}\}$$

`\sin(x)`	`\sinh(x)`	`\arcsin(x)`	`\asin(x)`		$\sin(x)$	$\sinh(x)$	$\arcsin(x)$	$\mathrm{asin}(x)$
`\cos(x)`	`\cosh(x)`	`\arccos(x)`	`\acos(x)`		$\cos(x)$	$\cosh(x)$	$\arccos(x)$	$\mathrm{acos}(x)$
`\tan(x)`	`\tanh(x)`	`\arctan(x)`	`\atan(x)`	$\Rightarrow$	$\tan(x)$	$\tanh(x)$	$\arctan(x)$	$\mathrm{atan}(x)$
`\csc(x)`	`\csch(x)`	`\arccsc(x)`	`\acsc(x)`		$\csc(x)$	$\mathrm{csch}(x)$	$\mathrm{arccsc}(x)$	$\mathrm{acsc}(x)$
`\sec(x)`	`\sech(x)`	`\arcsec(x)`	`\asec(x)`		$\sec(x)$	$\mathrm{sech}(x)$	$\mathrm{arcsec}(x)$	$\mathrm{asec}(x)$
`\cot(x)`	`\coth(x)`	`\arccot(x)`	`\acot(x)`		$\cot(x)$	$\coth(x)$	$\mathrm{arccot}(x)$	$\mathrm{acot}(x)$

`\sine`	`\hypsine`	`\arcsine`	`\asine`
`\cosine`	`\hypcosine`	`\arccosine`	`\acosine`
`\tangent`	`\hyptangent`	`\arctangent`	`\atangent`
`\cosecant`	`\hypcosecant`	`\arccosecant`	`\acosecant`
`\secant`	`\hypsecant`	`\arcsecant`	`\asecant`
`\cotangent`	`\hypcotangent`	`\arccotangent`	`\acotangent`

`\exp(\tall)`	$\exp(A_x^{x^x})$		`\exponential`
`\log(\tall)`	$\log(A_x^{x^x})$		`\logarithm`
`\ln(\tall)`	$\ln(A_x^{x^x})$	old definitions $\Rightarrow$	`\naturallogarithm`
`\det(\tall)`	$\det(A_x^{x^x})$		`\determinant`
`\Pr(\tall)`	$\Pr(A_x^{x^x})$		`\Probability`

New operators:

`\trace` or `\tr`	`\tr\rho` $\to \mathrm{tr}\,\rho$ also `\tr(\tall)` $\to \mathrm{tr}(A_x^{x^x})$	trace; same bracing as trig functions
`\Trace` or `\Tr`	`\Tr\rho` $\to \mathrm{Tr}\,\rho$	alternate
`\rank`	`\rank M` $\to \mathrm{rank}\,M$	matrix rank
`\erf`	`\erf(x)` $\to \mathrm{erf}(x)$	Gauss error function
`\Res`	`\Res[f(z)]` $\to \mathrm{Res}[f(z)]$	residue; same bracing as trig functions
`\principalvalue`	`\pv{\int f(z) \dd{z}}` $\to \mathcal{P}\int f(z)\,\mathrm{d}z$	Cauchy principal value
	`\PV{\int f(z) \dd{z}}` $\to \mathrm{P.V.}\int f(z)\,\mathrm{d}z$	alternate
`\Re`	`\Re{z}` $\to \mathrm{Re}\{z\}$	old `\Re` renamed to `\real` $\to \Re$
`\Im`	`\Im{z}` $\to \mathrm{Im}\{z\}$	old `\Im` renamed to `\imaginary` $\to \Im$

But

$$\mathrm{Re}(\frac{1}{xx}) \qquad \mathrm{Re}[\frac{1}{xx}] \qquad \mathrm{Im}(\frac{1}{xx}) \qquad \mathrm{Im}[\frac{1}{xx}]$$

1.4 Quick quad text

General text:

`\qqtext`	`\qq{}`	general quick quad text with argument
	`[\qq{word or phrase}]` $\to$ [word or phrase]	normal mode; left and right `\quad`
	`[\qq*{word or phrase}]` $\to$ [word or phrase]	starred mode; right `\quad` only

Special macros:

`\qcomma` or `[\qc]` $\to$ [,]	right `\quad` only
`[\qcc]` $\to$ [c.c.]	complex conjugate; left and right `\quad` unless starred `[\qcc*]` $\to$ [$qcc*$]
`[\qif]` $\to$ [if]	left and right `\quad` unless starred `[\qif*]` $\to$ [if]

Similar to `\qif`:
`\qthen`, `\qelse`, `\qotherwise`, `\qunless`, `\qgiven`, `\qusing`, `\qassume`, `\qsince`,
`\qlet`, `\qfor`, `\qall`, `\qeven`, `\qodd`, `\qinteger`, `\qand`, `\qor`, `\qas`, `\qin`

1.5 Derivatives

`\differential`	`\dd` $\to \mathrm{d}$	
	`\dd x` $\to \mathrm{d}x$	no spacing (not recommended)
	`\dd{x}` $\to$ ␣$\mathrm{d}x$␣	automatic spacing based on neighbors
	`\dd[3]{x}` $\to \mathrm{d}^3x$	optional power
	`\dd(\cos\theta)` $\to \mathrm{d}(\cos\theta)$	long-form; automatic braces
`\derivative`	`\dv{x}` $\to \frac{\mathrm{d}}{\mathrm{d}x}$	one argument
	`\dv{f}{x}` $\to \frac{\mathrm{d}f}{\mathrm{d}x}$	two arguments
	`\dv[n]{f}{x}` $\to \frac{\mathrm{d}^n f}{\mathrm{d}x^n}$	optional power
	`\dv{x}(\grande)` $\to \frac{\mathrm{d}}{\mathrm{d}x}\left(\frac{1}{xx}\right)$	long-form; automatic braces, spacing
	`\dv*{f}{x}` $\to \mathrm{d}f/\mathrm{d}x$	inline form using `\flatfrac`
`\partialderivative`	`\pderivative{x}` $\to \frac{\partial}{\partial x}$	alternate name
	`\pdv{x}` $\to \frac{\partial}{\partial x}$	shorthand name
	`\pdv{f}{x}` $\to \frac{\partial f}{\partial x}$	two arguments
	`\pdv[n]{f}{x}` $\to \frac{\partial^n f}{\partial x^n}$	optional power
	`\pdv{x}(\grande)` $\to \frac{\partial}{\partial x}\left(\frac{1}{xx}\right)$	long-form
	`\pdv{f}{x}{y}` $\to \frac{\partial^2 f}{\partial x \partial y}$	mixed partial
	`\pdv*{f}{x}` $\to \partial f/\partial x$	inline form using `\flatfrac`
`\variation`	`\var{F[g(x)]}` $\to \delta F[g(x)]$	functional variation (works like `\dd`)
	`\var(E-TS)` $\to \delta(E-TS)$	long-form
`\functionalderivative`	`\fdv{g}` $\to \frac{\delta}{\delta g}$	functional derivative (works like `\dv`)
	`\fdv{F}{g}` $\to \frac{\delta F}{\delta g}$	
	`\fdv{V}(E-TS)` $\to \frac{\delta}{\delta V}(E-TS)$	long-form
	`\fdv*{F}{x}` $\to \delta F/\delta x$	inline form using `\flatfrac`

But

$$\mathrm{d}^2[\frac{1}{xx}]$$

1.6 Dirac bra-ket notation

`\bra{\phi}\ket{\psi}` $\to \langle\phi|\psi\rangle$ as opposed to $\langle\phi|\psi\rangle$

whereas a similar construction with higher-level macros will not contract in a robust manner

`\bra{\phi}\dyad{\psi}{\xi}` $\to \langle\phi|\,|\psi\rangle\langle\xi|$.

On the other hand, the correct output can be generated by sticking to the fundamental commands,

`\bra{\phi}\ket{\psi}\bra{\xi}` $\to \langle\phi|\psi\rangle\,\langle\xi|$

`\ket`	`\ket{\tall}` $\to \left\lvert A_x^x \right\rangle$	automatic sizing
	`\ket*{\tall}` $\to A_x^x \,\lvert A_x^x\rangle$	no resize
`\bra`	`\bra{\tall}` $\to \left\langle A_x^x \right\rvert$	automatic sizing
	`\bra{\phi}\ket{\psi}` $\to \langle\phi\vert\psi\rangle$	automatic contraction
	`\bra{\phi}\ket{\tall}` $\to \left\langle \phi \middle\vert A_x^x \right\rangle$	contraction inherits automatic sizing
	`\bra{\phi}\ket*{\tall}` $\to \phi A_x^x \,\langle\phi\vert A_x^x\rangle$	a star on either term in the contraction prohibits resizing
	`\bra*{\phi}\ket{\tall}` $\to \phi A_x^x \,\langle\phi\vert A_x^x\rangle$	
	`\bra*{\phi}\ket*{\tall}` $\to \phi A_x^x \,\langle\phi\vert A_x^x\rangle$	
`\innerproduct`	`\braket{a}{b}` $\to \langle a\vert b\rangle$	two-argument braket
	`\braket{a}` $\to \langle a\vert a\rangle$	one-argument (norm)
	`\braket{a}{\tall}` $\to \left\langle a \middle\vert A_x^x \right\rangle$	automatic sizing
	`\braket*{a}{\tall}` $\to a A_x^x \,\langle a\vert A_x^x\rangle$	no resize
	`\ip{a}{b}` $\to \langle a\vert b\rangle$	shorthand name
`\outerproduct`	`\dyad{a}{b}` $\to \lvert a\rangle\langle b\rvert$	two-argument dyad
	`\dyad{a}` $\to \lvert a\rangle\langle a\rvert$	one-argument (projector)
	`\dyad{a}{\tall}` $\to \left\lvert a \right\rangle\left\langle A_x^x \right\rvert$	automatic sizing
	`\dyad*{a}{\tall}` $\to a A_x^x \,\lvert a\rangle\langle A_x^x\rvert$	no resize
	`\ketbra{a}{b}` $\to \lvert a\rangle\langle b\rvert$	alternative name
	`\op{a}{b}` $\to \lvert a\rangle\langle b\rvert$	shorthand name
`\expectationvalue`	`\expval{A}` $\to \langle A\rangle$	implicit form
	`\expval{A}{\Psi}` $\to A\,\langle\Psi\vert A\vert\Psi\rangle$	explicit form
	`\ev{A}{\Psi}` $\to A\,\langle\Psi\vert A\vert\Psi\rangle$	shorthand name
	`\ev{\grande}{\Psi}` $\to \frac{1}{xx}\,\langle\Psi\vert\frac{1}{xx}\vert\Psi\rangle$	default sizing ignores middle argument
	`\ev*{\grande}{\tall}` $\to \frac{1}{xx}A_x^x\,\langle A_x^x\vert\frac{1}{xx}\vert A_x^x\rangle$	single star does no resizing whatsoever
	`\ev**{\grande}{\Psi}` $\to \left\langle \Psi \middle\vert \frac{1}{xx} \middle\vert \Psi \right\rangle$	double star resizes based on all parts
`\matrixelement`	`\matrixel{n}{A}{m}` $\to A\,\langle n\vert A\vert m\rangle$	requires all three arguments
	`\mel{n}{A}{m}` $\to A\,\langle n\vert A\vert m\rangle$	shorthand name
	`\mel{n}{\grande}{m}` $\to \frac{1}{xx}\,\langle n\vert\frac{1}{xx}\vert m\rangle$	default sizing ignores middle argument
	`\mel*{n}{\grande}{\tall}` $\to n\frac{1}{xx}A_x^x\,\langle n\vert\frac{1}{xx}\vert A_x^x\rangle$	single star does no resizing whatsoever
	`\mel**{n}{\grande}{m}` $\to \left\langle n \middle\vert \frac{1}{xx} \middle\vert m \right\rangle$	double star resizes based on all parts

1.7 Matrix macros

```
\begin{pmatrix}
\imat{2} \\ a & b
\end{pmatrix}
```

$\Rightarrow$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \\ a & b \end{pmatrix}$$

```
\begin{pmatrix}
\mqty{\imat{2}} & \mqty{a\\b} \\ \mqty{c & d} & e
\end{pmatrix}
```

$\Rightarrow$

$$\begin{pmatrix} 1 & 0 & a \\ 0 & 1 & b \\ c & d & e \end{pmatrix}$$

```
\mqty(\mqty{\imat{2}} & \mqty{a\\b} \\ \mqty{c & d} & e)
```

$\Rightarrow$

$$\begin{pmatrix} 1 & 0 & a \\ 0 & 1 & b \\ c & d & e \end{pmatrix}$$

But, alignment is illusion

$$\begin{pmatrix} 1 & 0 & \frac{x}{y} \\ 0 & 1 & b \\ u+v+w+x+y+z & d & e \end{pmatrix}$$

<table>
<tr><td>\matrixquantity</td><td>\mqty{a & b \\ c & d} $\rightarrow \begin{matrix} a & b \\ c & d \end{matrix}$</td><td>groups a set of matrix elements into a single object</td></tr>
<tr><td></td><td>\mqty(a & b \\ c & d) $\rightarrow \begin{pmatrix} a & b \\ c & d \end{pmatrix}$</td><td>parentheses</td></tr>
<tr><td></td><td>\mqty*(a & b \\ c & d) $\rightarrow \left(\begin{matrix} a & b \\ c & d \end{matrix}\right)$</td><td>alternate parentheses</td></tr>
<tr><td></td><td>\mqty[a & b \\ c & d] $\rightarrow \begin{bmatrix} a & b \\ c & d \end{bmatrix}$</td><td>square brackets</td></tr>
<tr><td></td><td>\mqty|a & b \\ c & d| $\rightarrow \begin{vmatrix} a & b \\ c & d \end{vmatrix}$</td><td>vertical bars</td></tr>
<tr><td></td><td>\pmqty{} $\leftrightarrow$ \mqty()
\Pmqty{} $\leftrightarrow$ \mqty*()
\bmqty{} $\leftrightarrow$ \mqty[]
\vmqty{} $\leftrightarrow$ \mqty||</td><td>alternative syntax; robust and more LaTeX-friendly</td></tr>
<tr><td>\smallmatrixquantity</td><td>\smqty{a & b \\ c & d} $\rightarrow \begin{smallmatrix} a & b \\ c & d \end{smallmatrix}$</td><td>the smallmatrix form of \mqty</td></tr>
<tr><td></td><td>\smqty() or \spmqty{}</td><td>small version of \mqty()</td></tr>
<tr><td></td><td>\smqty*() or \sPmqty{}</td><td>small version of \mqty*()</td></tr>
<tr><td></td><td>\smqty[] or \sbmqty{}</td><td>small version of \mqty[]</td></tr>
<tr><td></td><td>\smqty|| or \svmqty{}</td><td>small version of \mqty||</td></tr>
<tr><td>\matrixdeterminant</td><td>\mdet{a & b \\ c & d} $\rightarrow \begin{vmatrix} a & b \\ c & d \end{vmatrix}$</td><td>matrix determinant</td></tr>
<tr><td></td><td>\smdet{a & b \\ c & d} $\rightarrow \left|\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}\right|$</td><td>small matrix determinant</td></tr>
<tr><td>\identitymatrix</td><td>\imat{n}</td><td>elements of $n \times n$ identity matrix</td></tr>
<tr><td></td><td>\smqty(\imat{3}) $\rightarrow \left(\begin{smallmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{smallmatrix}\right)$</td><td>formatted with \mqty or \smqty</td></tr>
<tr><td>\xmatrix</td><td>\xmat{x}{n}{m}</td><td>elements of $n \times m$ matrix filled with x</td></tr>
<tr><td></td><td>\smqty(\xmat{1}{2}{3}) $\rightarrow \left(\begin{smallmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{smallmatrix}\right)$</td><td>formatted with \mqty or \smqty</td></tr>
<tr><td></td><td>\smqty(\xmat*{a}{3}{3}) $\rightarrow \left(\begin{smallmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{smallmatrix}\right)$</td><td>star for element indices</td></tr>
<tr><td></td><td>\smqty(\xmat*{a}{3}{1}) $\rightarrow \left(\begin{smallmatrix} a_1 \\ a_2 \\ a_3 \end{smallmatrix}\right)$</td><td>as a vector with indices</td></tr>
<tr><td></td><td>\smqty(\xmat*{a}{1}{3}) $\rightarrow \left(\begin{smallmatrix} a_1 & a_2 & a_3 \end{smallmatrix}\right)$</td><td></td></tr>
<tr><td>\zeromatrix</td><td>\zmat{n}{m}</td><td>$n \times m$ matrix filled with zeros</td></tr>
<tr><td></td><td>\smqty(\zmat{2}{2}) $\rightarrow \left(\begin{smallmatrix} 0 & 0 \\ 0 & 0 \end{smallmatrix}\right)$</td><td>equivalent to \xmat{0}{n}{m}</td></tr>
<tr><td>\paulimatrix</td><td>\pmat{n}</td><td>n^{th} Pauli matrix</td></tr>
<tr><td></td><td>\smqty(\pmat{0}) $\rightarrow \left(\begin{smallmatrix} 1 & 0 \\ 0 & 1 \end{smallmatrix}\right)$
\smqty(\pmat{1}) $\rightarrow \left(\begin{smallmatrix} 0 & 1 \\ 1 & 0 \end{smallmatrix}\right)$
\smqty(\pmat{2}) $\rightarrow \left(\begin{smallmatrix} 0 & -i \\ i & 0 \end{smallmatrix}\right)$
\smqty(\pmat{3}) $\rightarrow \left(\begin{smallmatrix} 1 & 0 \\ 0 & -1 \end{smallmatrix}\right)$</td><td>$n \in \{0, 1, 2, 3 \text{ or } x, y, z\}$</td></tr>
<tr><td>\diagonalmatrix</td><td>\dmat{a,b,c,...}</td><td>specify up to eight diagonal or block diagonal elements</td></tr>
<tr><td></td><td>\mqty(\dmat{1,2,3}) $\rightarrow \begin{pmatrix} 1 & & \\ & 2 & \\ & & 3 \end{pmatrix}$</td><td></td></tr>
<tr><td></td><td>\mqty(\dmat[0]{1,2}) $\rightarrow \begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix}$</td><td>optional argument to fill spaces</td></tr>
</table>

	`\mqty(\dmat{1,2&3\\4&5})` $\rightarrow \begin{pmatrix} 1 & & \\ & 2 & 3 \\ & 4 & 5 \end{pmatrix}$	enter matrix elements for each block as a single diagonal element
`\antidiagonalmatrix`	`\admat{a,b,c,...}`	same as syntax as `\dmat`
	`\mqty(\admat{1,2,3})` $\rightarrow \begin{pmatrix} & & 1 \\ & 2 & \\ 3 & & \end{pmatrix}$	