Custom LaTeX Commands

Size Adaptive Math

`\bb{..}`	(x)	parantheses
`\bc{..}`	$[x]$	brackets
`\absv{..}`	$\|x\|$	absolute value
`\absvsq{..}`	$\|x\|^2$	absolute value squared
`\comm{..}{..}`	$[x, y]$	commutator
`\meanv{..}`	$\langle x \rangle$	mean value

Bra Ket Notation

`\bra{..}`	$\langle x\|$	bra
`\ket{..}`	$\|x\rangle$	ket
`\braket{..}{..}`	$\langle x\|y\rangle$	scalar product
`\ketbra{..}{..}`	$\|x\rangle\langle y\|$	ket-bra operator
`\braketop(3 arguments)`	$\langle x\|y\|z\rangle$	matrix element
`\smallbraketop(3 arguments)`	$\langle x\|y\|z\rangle$	small matrix element

Special functions

`\deltaf{..}`	$\delta(x)$	delta function
`\thetaf{..}`	$\theta(x)$	theta function
`\expf{..}`	$\exp(x)$	exponential function
`\ef{..}`	e^x	exponential function

Named states

`\ketPsi`	$\|\Psi\rangle$
`\ketpsi`	$\|\psi\rangle$
`\ketphi`	$\|\varphi\rangle$

`\ketup`	$\|\uparrow\rangle$	spin up
`\ketdo`	$\|\downarrow\rangle$	spin down
`\ketzero`	$\|0\rangle$	
`\ketone`	$\|1\rangle$	
`\ketg`	$\|g\rangle$	ground state
`\kete`	$\|e\rangle$	excited state
`\vac`	$\|\mathrm{vac}\rangle$	vacuum

Vectors

`\vecr`	$\mathbf{r}$
`\vecrone`	$\mathbf{r_1}$
`\vecrtwo`	$\mathbf{r_2}$
`\vecrn`	$\mathbf{r_N}$
`\vecri`	$\mathbf{r_i}$
`\vecrj`	$\mathbf{r_j}$
`\vecx`	$\mathbf{x}$
`\vecy`	$\mathbf{y}$
`\vecz`	$\mathbf{z}$
`\vecxi`	$\mathbf{x_i}$
`\vecxj`	$\mathbf{x_j}$
`\veck`	$\mathbf{k}$
`\vecq`	$\mathbf{q}$
`\vecp`	$\mathbf{p}$

Differentiation

`\partiald{..}`	$\frac{\partial}{\partial x}$	partial differentiation
`\laplace`	∇^2	laplace operator

Integration

`\integral{..}`	$\int \mathrm{d}x$	integral
`\integralb(3 arguments)`	$\int_x^y \mathrm{d}z$	integral with boundaries
`\integralf{..}{..}`	$\int \frac{\mathrm{d}x}{y}$	integral with fraction
`\intvol`	$\int \mathrm{d}^3 r$	integral over r space
`\intvolp`	$\int \mathrm{d}^3 r'$	integral over r' space
`\intvold`	$\int \mathrm{d}^3 r \int \mathrm{d}^3 r'$	double integral over space
`\intk`	$\int \mathrm{d}^3 k$	integral over k space
`\intkp`	$\int \mathrm{d}^3 k'$	integral over k' space
`\intkn`	$\int \frac{\mathrm{d}^3 k}{(2\pi)^3}$	normalized integral over k space
`\intkpn`	$\int \frac{\mathrm{d}^3 k'}{(2\pi)^3}$	normalized integral over k' space

Special symbols

`\hc`	h.c.	hermitian conjugate
`\hamil`	$\hat{\mathrm{H}}$	Hamilton operator
`\hastobe`	$\stackrel{!}{=}$	has to be

Second quantization

`\aop`	a	annihilation operator
`\aopi{..}`	a_x	annihilation operator, indexed
`\aopd`	$a^\dagger$	creation operator
`\aopdi{..}`	$a_x^\dagger$	creation operator, indexed
`\bop`	b	annihilation operator
`\bopi{..}`	b_x	annihilation operator, indexed
`\bopd`	$b^\dagger$	creation operator
`\bopdi{..}`	$b_x^\dagger$	creation operator, indexed
`\nop`	n	number operator
`\nopi{..}`	n_x	number operator, indexed

`\psiop`	$\hat{\psi}$	field operator
`\psiopd`	$\hat{\psi}^\dagger$	
`\PsiOp`	$\hat{\Psi}$	
`\PsiOpd`	$\hat{\Psi}^\dagger$	

Differences

`\Dx`	Δx
`\Dy`	Δy
`\Dz`	Δz
`\Dt`	Δt

Figures

`\igopt{..}{..}`

`\ig{..}{..}`

`\figopt(4 arguments)`

`\fig(3 arguments)`

`\doublefigopt(8 arguments)`

`\doublefig(7 arguments)`

`\figref{..}`