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Abstract

Place text abstract here or comment it out.

Contents

1 Macros

Here's a list of macros defined in macros.tex:

1.1 Brackets

$$\text{\textbackslash pa\{x\}} = (x) \tag{1a}$$
$$\text{\textbackslash cro\{x\}} = [x] \tag{1b}$$
$$\text{\textbackslash bra\{x\}} = \{x\} \tag{1c}$$
$$\text{\textbackslash abs\{x\}} = |x| \tag{1d}$$

1.2 Nabla

$$\text{\textbackslash vecnabla} = \boldsymbol{\nabla} \tag{2a}$$
$$\text{\textbackslash laplacien\{A\}} = \boldsymbol{\nabla}^2 A \tag{2b}$$
$$\text{\textbackslash laplacient\{A\}} = \boldsymbol{\nabla}_\perp^2 A \tag{2c}$$
$$\text{\textbackslash gradient\{A\}} = \boldsymbol{\nabla} A \tag{2d}$$
$$\text{\textbackslash grad\{A\}} = \boldsymbol{\nabla} A \tag{2e}$$
$$\text{\textbackslash divergence\{vB\}} = \boldsymbol{\nabla} \cdot \mathbf{B} \tag{2f}$$
$$\text{\textbackslash rotationnel\{vB\}} = \boldsymbol{\nabla} \times \mathbf{B} \tag{2g}$$

1.3 Differential operators

$$\text{\textbackslash delx\{y\}} = \frac{\partial y}{\partial x} \tag{3a}$$
$$\text{\textbackslash dely\{x\}} = \frac{\partial x}{\partial y} \tag{3b}$$
$$\text{\textbackslash delz\{y\}} = \frac{\partial y}{\partial z} \tag{3c}$$
$$\text{\textbackslash delr\{x\}} = \frac{\partial x}{\partial r} \tag{3d}$$
$$\text{\textbackslash delt\{y\}} = \frac{\partial y}{\partial t} \tag{3e}$$
$$\text{\textbackslash deli\{x\}\{y\}} = \frac{\partial x}{\partial y} \tag{3f}$$

$$\delxs{y} = \frac{\partial^2 y}{\partial x^2} \tag{4a}$$

$$\delys{x} = \frac{\partial^2 x}{\partial y^2} \tag{4b}$$

$$\delzs{y} = \frac{\partial^2 y}{\partial z^2} \tag{4c}$$

$$\delts{x} = \frac{\partial^2 x}{\partial t^2} \tag{4d}$$

$$\delis{x}{y} = \frac{\partial^2 x}{\partial y^2} \tag{4e}$$

$$\dx{y} = \frac{\mathrm{d}y}{\mathrm{d}x} \tag{5a}$$

$$\dy{x} = \frac{\mathrm{d}x}{\mathrm{d}y} \tag{5b}$$

$$\dz{y} = \frac{\mathrm{d}y}{\mathrm{d}z} \tag{5c}$$

$$\di{x}{y} = \frac{\mathrm{d}x}{\mathrm{d}y} \tag{5d}$$

$$\dxs{y} = \frac{\mathrm{d}^2 y}{\mathrm{d}x^2} \tag{6a}$$

$$\dys{x} = \frac{\mathrm{d}^2 x}{\mathrm{d}y^2} \tag{6b}$$

$$\dzs{y} = \frac{\mathrm{d}^2 y}{\mathrm{d}z^2} \tag{6c}$$

$$\dis{x}{y} = \frac{\mathrm{d}^2 x}{\mathrm{d}y^2} \tag{6d}$$

$$\dtreal{y} = \frac{\mathrm{d}y}{\mathrm{d}t} \tag{7a}$$

$$\dtsreal{x} = \frac{\mathrm{d}^2 x}{\mathrm{d}t^2} \tag{7b}$$

$$\dt{y} = \dot{y} \tag{7c}$$

$$\dts{x} = \ddot{x} \tag{7d}$$

1.4 Functions

$$\backslash\text{erf}\{\text{x}\} = \operatorname{erf}\{x\} \tag{8a}$$
$$\backslash\text{ex}\{\text{x}\} = \exp\{x\} \tag{8b}$$
$$\backslash\text{ep}\{\text{x}\} = \text{e}^{(x)} \tag{8c}$$
$$\backslash\text{e}\{\text{x}\} = \text{e}^{x} \tag{8d}$$
$$\backslash\ln\{\text{x}\} = \ln x \tag{8e}$$
$$\backslash\log\{\text{x}\} = \log x \tag{8f}$$
$$\backslash\text{lnp}\{\text{x}\} = \ln(x) \tag{8g}$$
$$\backslash\text{logp}\{\text{x}\} = \log(x) \tag{8h}$$
$$\backslash\text{cosinus}\{\text{x}\} = \cos x \tag{8i}$$
$$\backslash\text{cosp}\{\text{x}\} = \cos(x) \tag{8j}$$
$$\backslash\text{cosine}\{\text{x}\} = \cos x \tag{8k}$$
$$\backslash\text{sinp}\{\text{x}\} = \sin(x) \tag{8l}$$
$$\backslash\text{sinus}\{\text{x}\} = \sin x \tag{8m}$$
$$\backslash\text{sine}\{\text{x}\} = \sin x \tag{8n}$$
$$\backslash\text{sinec}\{\text{x}\} = \operatorname{sinc}(x) \tag{8o}$$
$$\backslash\text{sinecsquared}\{\text{x}\} = \operatorname{sinc}^2(x) \tag{8p}$$
$$\backslash\text{cossquared}\{\text{x}\} = \cos^2 x \tag{8q}$$
$$\backslash\text{sinsquared}\{\text{x}\} = \sin^2 x \tag{8r}$$
$$\backslash\text{cosinesquared}\{\text{x}\} = \cos^2 x \tag{8s}$$
$$\backslash\text{sinesquared}\{\text{x}\} = \sin^2 x \tag{8t}$$
$$\backslash\text{acos}\{\text{x}\} = \operatorname{acos}(x) \tag{8u}$$
$$\backslash\text{asin}\{\text{x}\} = \operatorname{asin}(x) \tag{8v}$$
$$\backslash\text{atan}\{\text{x}\} = \operatorname{atan}(x) \tag{8w}$$
$$\backslash\text{sech}\{\text{x}\} = \operatorname{sech}(x) \tag{8x}$$
$$\backslash\tanh\{\text{x}\} = \tanh x \tag{8y}$$
$$\backslash\text{sechsquared}\{\text{x}\} = \operatorname{sech}^2(x) \tag{8z}$$

1.5 Physical constants

$$\epsz = \epsilon_0 \tag{9a}$$
$$\epsr = \epsilon_r \tag{9b}$$
$$\muz = \mu_0 \tag{9c}$$
$$\om = \omega \tag{9d}$$
$$\omi\{2\} = \omega_2 \tag{9e}$$
$$\omegaz = \omega_0 \tag{9f}$$
$$\omegasquared = \omega^2 \tag{9g}$$
$$\omegazsquared = \omega_0^2 \tag{9h}$$
$$\omegazsquaredomegasquared = \omega_0^2 - \omega^2 \tag{9i}$$
$$\chiun = \chi^{(1)} \tag{9j}$$
$$\chideux = \chi^{(2)} \tag{9k}$$
$$\chitrois = \chi^{(3)} \tag{9l}$$

1.6 Vectors

$$\ve\{A\} = \mathbf{A} \tag{10a}$$
$$\vE = \mathbf{E} \tag{10b}$$
$$\vA = \mathbf{A} \tag{10c}$$
$$\vB = \mathbf{B} \tag{10d}$$
$$\vF = \mathbf{F} \tag{10e}$$
$$\vP = \mathbf{P} \tag{10f}$$
$$\vS = \mathbf{S} \tag{10g}$$

$$\va = \mathbf{a} \tag{11a}$$
$$\vb = \mathbf{b} \tag{11b}$$
$$\vc = \mathbf{c} \tag{11c}$$
$$\vd = \mathbf{d} \tag{11d}$$
$$\vee = \mathbf{e} \tag{11e}$$
$$\vf = \mathbf{f} \tag{11f}$$
$$\vg = \mathbf{g} \tag{11g}$$
$$\vh = \mathbf{h} \tag{11h}$$
$$\vi = \mathbf{i} \tag{11i}$$
$$\vj = \mathbf{j} \tag{11j}$$
$$\vk = \mathbf{k} \tag{11k}$$
$$\vl = \mathbf{l} \tag{11l}$$
$$\vm = \mathbf{m} \tag{11m}$$
$$\vp = \mathbf{p} \tag{11n}$$
$$\vq = \mathbf{q} \tag{11o}$$
$$\vr = \mathbf{r} \tag{11p}$$
$$\vqd = \dot{\mathbf{q}} \tag{11q}$$
$$\vv = \mathbf{v} \tag{11r}$$
$$\vt = \mathbf{t} \tag{11s}$$
$$\vx = \mathbf{x} \tag{11t}$$
$$\vz = \mathbf{z} \tag{11u}$$

1.6.1 Vectors omega

$$\vEo = \mathbf{E}_{\omega} \tag{12a}$$
$$\vEto = \mathbf{E}_{2\omega} \tag{12b}$$
$$\vPo = \mathbf{P}_{\omega} \tag{12c}$$
$$\vPto = \mathbf{P}_{2\omega} \tag{12d}$$

1.7 Hat

$$\hvp = \hat{\mathbf{p}} \tag{13a}$$
$$\hvq = \hat{\mathbf{q}} \tag{13b}$$
$$\hvr = \hat{\mathbf{r}} \tag{13c}$$
$$\hvu = \hat{\mathbf{u}} \tag{13d}$$
$$\hvx = \hat{\mathbf{x}} \tag{13e}$$
$$\hvy = \hat{\mathbf{y}} \tag{13f}$$
$$\hvz = \hat{\mathbf{z}} \tag{13g}$$
$$\hvtheta = \hat{\boldsymbol{\theta}} \tag{13h}$$
$$\hvphi = \hat{\boldsymbol{\phi}} \tag{13i}$$

1.8 Tilde

$$\tilde{\mathrm{x}} = \tilde{x} \tag{14a}$$
$$\tE = \tilde{E} \tag{14b}$$
$$\tP = \tilde{P} \tag{14c}$$
$$\tvE = \tilde{\mathbf{E}} \tag{14d}$$
$$\tvP = \tilde{\mathbf{P}} \tag{14e}$$
$$\tA = \tilde{\mathrm{A}} \tag{14f}$$
$$\tvA = \tilde{\mathbf{A}} \tag{14g}$$

1.9 Random

$$\mum = \mu\mathrm{m} \tag{15}$$
$$\dix{3} = \times 10^{3} \tag{16}$$
$$\vmu = \boldsymbol{\mu} \tag{17}$$
$$\vDelta = \boldsymbol{\Delta} \tag{18}$$

1.9.1 Inside text

\schrodinger: Schrödinger

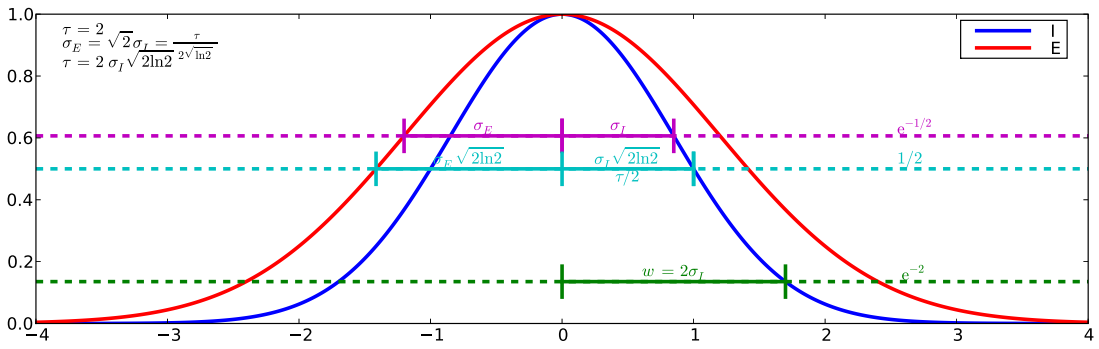

Figure 1: This is a caption

2 Other useful information

See also the *The Not So Short Introduction to LaTeX 2ε* [1] available online at http://tobi.oetiker.ch/lshort/lshort.pdf or http://www.ctan.org/tex-archive/info/lshort/english/lshort.pdf.

2.1 Example functions

$$F(x) = \int_0^\infty \frac{\sqrt{a+x}}{(b+x)^5}\,\mathrm{d}x \tag{19}$$

2.2 Citing

When a label is attached to an equation, it can be cited. By adding "\label{eqn:example}" in the function's *align* environment, it becomes possible to cite equation (19) with "\eqref{eqn:example}".

To refence a book, article or other, use BibTeX. Then cite the document using its BibTeXkey with "\cite{BibTeX key}". For example, "\cite{Taflove2005}" will give the clickable link [2] which points to the references section.

2.3 Figures

Figures should be in PDF or PNG format if compiling using **pdflatex** or EPS if compiling with **latex** (resulting in a DVI file).

Since PDF is a vectorial format, figures in PDF will give higher quality results (if the figure is in vectorial format that is). Figure 1 shows an example.

2.4 Greek alphabet

Code	Result	Code	Result	Code	Result	Code	Result
\alpha	α	\mu	μ	\chi	χ	\Sigma	Σ
\beta	β	\nu	ν	\psi	ψ	\varSigma	$\varSigma$
\gamma	γ	\xi	ξ	\omega	ω	\Upsilon	Υ
\delta	δ	\pi	π	\Gamma	Γ	\varUpsilon	$\varUpsilon$
\epsilon	ϵ	\varpi	ϖ	\varDelta	$\varDelta$	\Phi	Φ
\varepsilon	ε	\rho	ρ	\Theta	Θ	\varPhi	$\varPhi$
\zeta	ζ	\varrho	ϱ	\varTheta	$\varTheta$	\Psi	Ψ
\eta	η	\sigma	σ	\Lambda	Λ	\varPsi	$\varPsi$
\theta	θ	\varsigma	ς	\varLambda	$\varLambda$	\Omega	Ω
\vartheta	ϑ	\tau	τ	\Xi	Ξ	\varOmega	$\varOmega$
\iota	ι	\upsilon	υ	\varXi	$\varXi$		
\kappa	κ	\phi	ϕ	\Pi	Π		
\lambda	λ	\varphi	φ	\varPi	$\varPi$		

References

[1] T. Oetiket, H. Partl, Hyna, and E. Schlegl. The not-so-short introduction to LaTeX. http://www.ctan.org/tex-archive/info/lshort/english/lshort.pdf.

[2] Allen Taflove and Susan Hagness. *Computational Electrodynamics: The Finite-Difference Time-Domain Method, Third Edition*. Artech House, 3 edition, 2005.