

EASYMATH

Slightly faster mathematical typesetting

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1 Introduction

This L^AT_EX package provides a number of commands to make it easier to “live-T_EX” mathematically-heavy lectures. It generally reflects the sorts of mathematics I’ve had to type during the course of an undergraduate Chemistry degree, taking an additional module in scientific computing (with a focus on partial differential equations).

Table 2.1: Symbols provided by EASYMATH.

Command	Example	Description
<code>\D</code>	d	Differential operator
<code>\del</code>	∂	Partial differential operator
<code>\E</code>	e	Euler's number
<code>\Ey</code> , <code>\egy</code> , <code>\energy</code>	\mathcal{E}	Energy
<code>\ham</code>	\mathcal{H}	Hamiltonian operator
<code>\V</code>	\mathcal{V}	Voltage (as a variable, to avoid confusion with unit)

Every command is wrapped in `\ensuremath` and so can be used in prose directly, without entering `$math mode$`.

2 Symbols

This package defines a few symbols, largely for later internal use.

3 Brackets

Several types of brackets are provided.

4 Functions

Here are provided some common functions and useful snippets for writing them.

5 Differentials

Much of this package aims to make typesetting of differential equations faster. Utilities are provided for both partial and ordinary differentials.

Table 3.2: Brackets provided by EASYMATH.

Command	Example	Description
<code>\br</code>	(abc)	Parentheses
<code>\abr</code>	$\langle abc \rangle$	Angle brackets
<code>\cubr</code>	$\{abc\}$	Curly braces
<code>\sqbr</code>	$[abc]$	Square brackets
<code>\bra</code>	$\langle \phi $	Dirac “bra”
<code>\ket</code>	$ \psi \rangle$	Dirac “ket”
<code>\braket</code>	$\langle \phi \psi \rangle$	Dirac “braket”
<code>\bramket</code>	$\langle \phi A \psi \rangle$	Dirac “braket” (mnemonic: <i>middle</i>)

Table 4.3: Function commands provided by EASY-MATH.

Command	Example	Description
<code>\tx</code>	$\mathcal{E}_{\text{total}}$	A shorter alias for <code>\text</code> . Does not require <code>\{ \}</code> in <code>su{b,per}</code> script.
<code>\of</code>	$f(x)$	Correctly-spaced, correctly-sized, function argument.
<code>\upf</code>	$\text{abc}(x)$	Upright multiletter function with argument.
<code>\ex</code>	$e^{(i\pi)}$	Exponential function with argument.
<code>\inv</code>	$\frac{1}{\rho}$	Inverse.
<code>\is</code>	$y \Leftarrow ax^2$	Algebraic assignment.
<code>\Oh</code>	$\mathcal{O}(n^3)$	Big-O notation.
<code>\fr</code>	$(x + y) / z$	Fraction, either normal or slashed depending on context. Arguments parenthesized as required.

Table 5.4: Differential functions provided by EASY-MATH.

Command	Example	Description
<code>\diffn</code>	$\frac{d^4 y}{dx^4}$	n th order ordinary differential.
<code>\diff</code>	$\frac{dy}{dx}$	First-order differential.
<code>\ddtn</code>	$\frac{d^6 y}{dt^6}$	n th order ordinary differential with respect to time.
<code>\ddt</code>	$\frac{dy}{dt}$	First-order ordinary differential with respect to time.
<code>\pdiffn</code>	$\frac{\partial^2 y}{\partial x^2}$	n th order partial differential.
<code>\pdiff</code>	$\frac{\partial y}{\partial x}$	First-order partial differential.
<code>\pdtn, \pddtn</code>	$\frac{\partial^2 T}{\partial t^2}$	n th order partial differential with respect to time.
<code>\pdt, \pddt</code>	$\frac{\partial \Gamma}{\partial t}$	First-order partial differential with respect to time.

Table 6.5: Integral functions provided by EASY-MATH.

Command	Example	Description
<code>\lint</code>	$\int_a^b f(x) dx$	Limited integral.
<code>\uint</code>	$\int g(r) dr$	Unlimited integral.

6 Integrals

A few commands are provided to make it easier to type integrals.