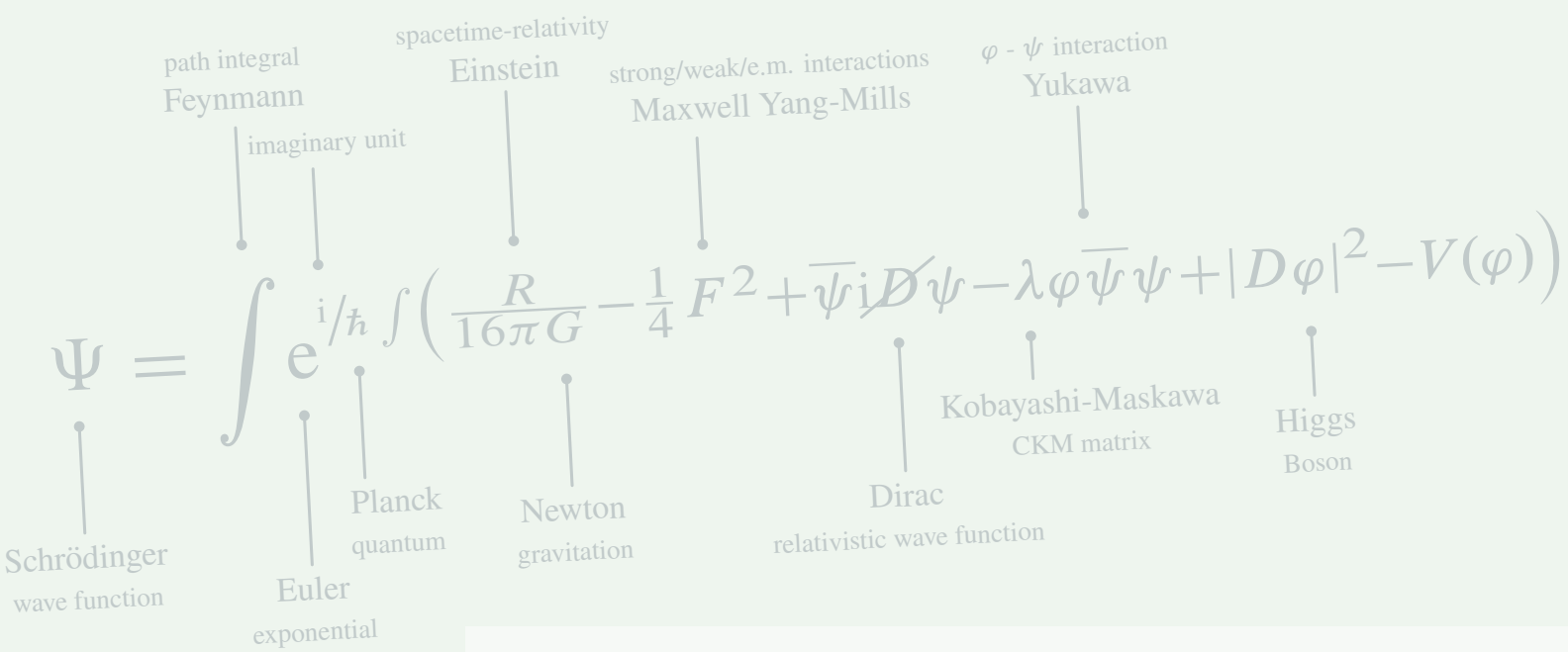
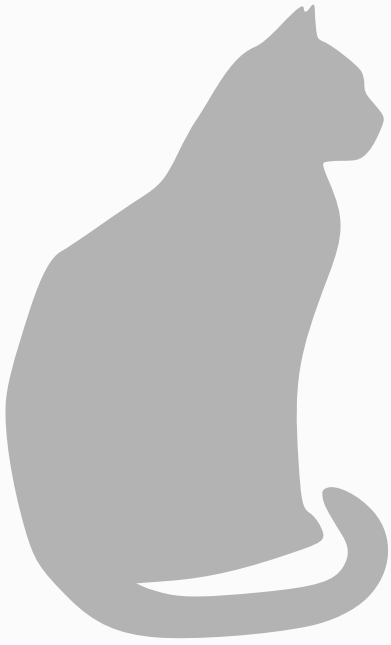


The LiteSolution Class

Hangzhou Dianzi University



Mingyu XIA (xiamyphys@gmail.com) — Version 2.4a

Contents

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1 Introduction to the LiteSolution Class

CHAPTER

1.1 Preface

This is the document for the LiteSolution class, which is designed for typesetting solutions of problems in exams, textbooks, etc.

Welcome to feedback bugs or ideas via email `xiamyphys@gmail.com` or GitHub.

1.1.1 Installing LiteSolution and loading it

Simply download `litesolution.cls` file from GitHub or CTAN and save it under your working directory. However, I strongly suggest to use terminal to install and update all packages to the latest version

```
sudo tlmgr update --self --all
```

To learn more, please refer to How do I update my TEX distribution?

1.1.2 Compatibility

The test environments are macOS + MacTEX 2024 / Overleaf / Ubuntu 22.04.2 + TEX Live 2024 and they all work fine for pdfLATEX and XELATEX compilers. Windows and Unix platforms compatibility unknown.

1.2 Global Options of this Class

```
\documentclass[⟨options⟩]{litesolution}
```

1.2.1 The answer option

The hideanswer mode can hide contents in the `solution` environment and `ans` command, and make the effect of `emph` weaker.

1.2.2 The math option

The mtpro2, newtx and newtxsf modes can format the font of formulas in the document. Please check if mtpro2 font has been installed on your computer correctly before using mtpro2 mode.

1.3 Derivative Works

Package notebeamer provides macros for inputting slides on note papers quickly.

Package fadingimage provides macros for inputting full width picture at the edges of pages quickly.

2 Chapter Settings & Usages of this Class

2.1 Cover Configurations

2.1.1 The cover page configurations

```
\coverset{
    title           = \sffamily The \pkg{LiteSolution} Class,
    subtitle        = \sffamily\scshape Hangzhou Dianzi University,
    bioinfo         = Mingyu XIA (\mailto{xiamyphys@gmail.com})\quad|\quad
                      Version 2.4a,
    covercolor      = DarkSeaGreen,
    coverhead       = universe,
    coverhead.rotate = 3,
    cover           = schrodinger,
    cover.pattern   = sixpointed stars
}
```

2.1.2 The chapter head configurations

```
\chapterimage {⟨insert image macro⟩}
```

This command can assign the format of the image at every chapters begin and you can adjust the format of the image with the fadingimage package.

2.2 Preset Packages

This template has preset many packages. The following packages are the common ones

amsthm	amssymb	bm	booktabs	cancel	caption
circuitikz	datetime	derivative	diagbox	enumitem	esvect
extarrows	fadingimage	fancyhdr	fixdif	fontawesome5	geometry
graphicx	hyperref	indentfirst	lipsum	magicwatermark	mathtools
mhchem	multicol	multirow	nicematrix	notebeamer	paracol
pgfplots	physics2	qrcode	refstyle	setspace	siunitx
subcaption	tabularx	soul	tasks	ulem	xcolor
xeCJK	xeCJKfntef	xfrac			

2.3 Preset Commands

2.3.1 The ans command

```
\ans {⟨contents⟩}
```

This command can underline the answer, and if mode noans is enabled the answer will be hidden.

2.3.2 The solute command

```
\solute {⟨number⟩}          \solute* {⟨contents⟩}
```

This command can create a fixable answer box when the mode noans is enabled.

2.3.3 The emph command

```
\emph {⟨content⟩}           \emph* {⟨content⟩}
```

The Quick Brown Fox Jumps Over the Lazy Dog: non-hideanswer mode
The Quick Brown Fox Jumps Over the Lazy Dog: hideanswer mode

2.3.4 Other preset commands

```
\def\i{\mathrm i}    \def\e{\mathrm e}    \def\T{\mathsf T}
\let\leq\leqslant    \let\geq\geqslant    \let\vec\vv
```

2.4 Preset amsthm Environments

2.4.1 The problem environment

```
\begin{problem}[Keywords]\leavevmode
\begin{tasks}(2)
  \task Choice A  \task[\true] Choice B
  \task Choice C  \task Choice D
\end{tasks}
\end{problem}
```

Problem 2.1 (Keywords).

A. Choice A ✔ Choice B

C. Choice C D. Choice D

2.4.2 The solution and note environment

```
\begin{solution}
  B is correct.
\end{solution}
```

Solution. B is correct.

```
\begin{note}
  We note that.
\end{note}
```

Note. We note that.

GO ON TO THE NEXT PAGE

Original Code for the Cover Head

```
\documentclass[svgnames,tikz]{standalone}

\usepackage{xcolor}
\usepackage{newtxtext,mtpro2,cancel,physics2,xfrac}
\usephysicsmodule{ab.legacy}
\usetikzlibrary{tikzmark}
\tikzset{every node/.style={align=center,DarkSlateGray!30},
          every path/.style={DarkSlateGray!30,line cap=round}}

\begin{document}\tikz{
    \node [above right] at (0,0) {$\color{DarkSlateGray!30}
      \tikzmarknode a\Psi=\displaystyle\tikzmarknode b\int
      \tikzmarknode c{\mathrm e}^{
        \sfrac{\tikzmarknode d{\mathrm i}}{\tikzmarknode e\hbar}
        \int\ab(\frac{\tikzmarknode fR}{16\pi \tikzmarknode gG}-\frac14\tikzmarknode hF^2
        +\overline\psi\mathrm i\tikzmarknode{i}{\cancel D}\psi-\tikzmarknode j\lambda
        \tikzmarknode k{\varphi\overline\psi}\psi
        +\abs{D\tikzmarknode l\varphi}^2-V(\varphi))}$};
      \draw ([yshift=-1ex] a.south) coordinate (A) --++ (0,-.5)
       node [scale=.45,below] {Schr\"odinger\\\footnotesize wave function};
      \draw ([yshift=1ex] b.north) coordinate (B) --++ (0,.55)
       node [scale=.45,above] {\footnotesize path integral\\Feynmann};
      \draw ([yshift=-1ex] c.south) coordinate (C) --++ (0,-.7)
       node [scale=.45,below] {Euler\\\footnotesize exponential};
      \draw ([yshift=1ex] d.north) coordinate (D) --++ (0,.45)
       node [scale=.45,above,xshift=1ex] {\footnotesize imaginary unit};
      \draw ([yshift=-1ex] e.south) coordinate (E) --++ (0,-.5)
       node [scale=.45,below,xshift=2ex] {Planck\\\footnotesize quantum};
      \draw ([yshift=1ex] f.north) coordinate (F) --++ (0,.7)
       node [scale=.45,above] {\footnotesize spacetime-relativity\\Einstein};
      \draw ([yshift=-1ex] g.south) coordinate (G) --++ (0,-.5)
       node [scale=.45,below] {Newton\\\footnotesize gravitation};
      \draw ([yshift=1ex] h.north) coordinate (H) --++ (0,.5)
       node [scale=.45,above,xshift=5ex] {\footnotesize strong/weak/e.m. interactions\\
           Maxwell Yang-Mills};
      \draw ([yshift=-1ex] i.south) coordinate (I) --++ (0,-.6)
       node [scale=.45,below] {Dirac\\\footnotesize relativistic wave function};
      \draw ([yshift=-1ex] j.south) coordinate (J) --++ (0,-.2)
       node [scale=.45,below,xshift=3ex] {Kobayashi-Maskawa\\\footnotesize CKM matrix};
      \draw ([yshift=1ex] k.north) coordinate (K) --++ (0,.5)
       node [scale=.45,above] {\footnotesize $\varphi$ - $\psi$ interaction\\Yukawa};
      \draw ([yshift=-1ex] l.south) coordinate (L) --++ (0,-.3)
       node [scale=.45,below] {Higgs\\\footnotesize Boson};
      \foreach \x in {A,B,...,L}\fill [DarkSlateGray!30] (\x) circle (.025);}
\end{document}
```