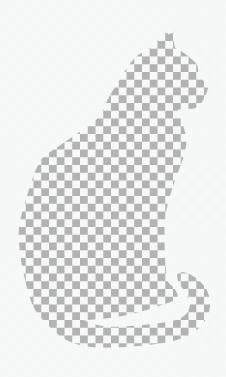
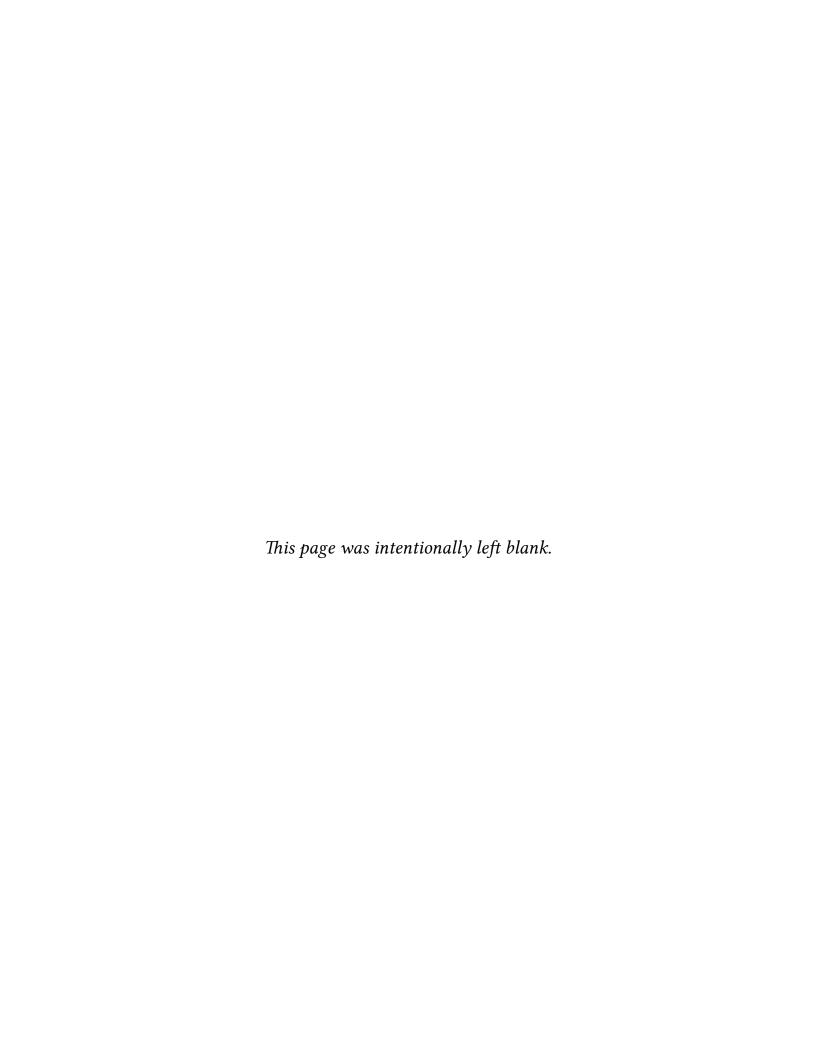
The LiteSolution Class

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1 Introduction to the LiteSolution Class

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@hdu.edu.cn 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 TFX 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 pdfteX and XateX 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 solution environment and ans command.

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 Related Packages

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 Settings & Usages of this Class

CHAPTER

2.1 Cover Configurations

2.1.1 The cover page configurations

\title{<content>} \subtitle{<content>}

\bioinfo{<content>} \cover[<pattern>]{<image>}

\coverhead [<angle>] {<image>} \coverhead*[<angle>] {<content>}

\begin{document} \maketitle[<color>]

\title{\sffamily The \pkg{LiteSolution} Class}

\subtitle{\sffamily\scshape Hangzhou Dianzi University}

\bioinfo{Mingyu Hsia (\mailto{xiamyphys@hdu.edu.cn})

\quad|\quad\today\quad|\quad Version 2.2b}

\cover[checkerboard]{schrodinger} \coverhead[5]{universe}

\begin{document} \maketitle[Midnightblue]

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	esvect	extarrows	fadingimage	fancyhdr	fixdif	fontawesome5
geometry	graphics	graphicx	hyperref	indentfirst	lipsum	mathtools	multicol
multirow	nicematrix	notebeamer	paracol	pgfplots	physics2	qrcode	refstyle
setspace	siunitx	tabularx	tasks	wallpaper	xcolor	xeCJK	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 Other preset commands

\def\i{\mathrm i} \def\e{\mathrm e} \def\T{\mathsf T}
\let\leq\leq\leq\leq\leq\leq\leq\leq\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}

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}

Correct.
\end{solution}

Correct.

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

2.5 Equation test

$$\begin{cases} i\hbar \,\partial_t \psi(\mathbf{x}, t) = \left(-\frac{\hbar^2}{2m} \nabla^2 + V \right) \\ i\hbar \,\partial_t \psi(\mathbf{x}, t) = -(i\hbar c \boldsymbol{\alpha} \cdot \nabla + \beta m c^2) \psi(\mathbf{x}, t) \end{cases}$$

4 2.5. Equation test

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\} \ [DarkSlateGray!30] \ (\x) circle (.025);}
\end{document}
```