

PHYS 395 Research Methods - Lecture 7

Managing bibliography with BibT_EX

Sergiy Bubin

*Department of Physics
Nazarbayev University*

Brief description

- BibT_EX is bibliography management software that is typically used with L_AT_EX
- It greatly enhances the capabilities available in L_AT_EX
- It allows to automatically format references according to a predefined style
- It allows to track, sort, and compress citations to references within document
- Users can create and re(use) their own bibliography files
- Developed by Oren Patashnik and Leslie Lamport in 1980s

Philosophy and usage

- BibT_EX follows the same idea implemented in L_AT_EX and other markup languages – separate content from actual rendering and appearance
- It uses a style-independent text files for lists of bibliography items
- BibT_EX bibliography files usually have extension .bib

Simple L^AT_EX example without BibT_EX

```
1 %file ex1.tex
2 \documentclass{article}
3 \title{My paper}
4 \author{Sergiy Bubin}
5
6 \begin{document}
7 \maketitle
8 In this document I want to mention
9 works \cite{hamermesh_gt} and \cite{mitroy2005}.
10
11 \begin{thebibliography}{9}
12 \bibitem{mitroy2005} J. Mitroy, Phys. Rev. Lett.
13 \textbf{94}, 033402 (2005)
14 \bibitem{hamermesh_gt} M. Hamermesh, \textit{Group
15 Theory and Its Application to Physical Problems}
16 (Addison–Wesley, Reading, MA, 1962)
17 \end{thebibliography}
18
19 \end{document}
```

Simple L^AT_EX example without BibT_EX (output)

My paper

Sergiy Bubin

January 29, 2020

In this document I want to mention works [2] and [1].

References

- [1] J. Mitroy, Phys. Rev. Lett. **94**, 033402 (2005)
- [2] M. Hamermesh, *Group Theory and Its Application to Physical Problems* (Addison-Wesley, Reading, MA, 1962)

Same example that uses BibT_EX

```
1 %file ex2.tex
2 \documentclass{article}
3 \title{My paper}
4 \author{Sergiy Bubin}
5
6 \begin{document}
7 \maketitle
8 In this document I want to mention
9 works \cite{hamermesh_gt} and \cite{mitroy2005}.
10
11 \bibliographystyle{siam}
12 \bibliography{myrefs} % .bib extension assumed
13
14 \end{document}
```

Same example that uses BibT_EX (bib file)

```
1 %file myrefs.bib
2 @article{mitroy2005,
3   title   = {Positron–Atom Complexes as Quantum
4             Halo States},
5   author  = {Mitroy, Jim},
6   journal = {Phys. Rev. Lett.},
7   year    = {2005},
8   pages   = {033402},
9   volume  = {94}
10  }
11
12 @book{hamermesh_gt,
13   title   = {Group Theory and Its Application to
14             Physical Problems},
15   author  = {Morton Hamermesh},
16   publisher = {Addison–Wesley},
17   year    = {1962},
18   address = {Reading, MA}
19  }
```

Same example that uses BibT_EX (output)

My paper

Sergiy Bubin

January 29, 2020

In this document I want to mention works [1] and [2].

References

- [1] M. HAMERMESH, *Group Theory and Its Application to Physical Problems*, Addison-Wesley, Reading, MA, 1962.
- [2] J. MITROY, *Positron-atom complexes as quantum halo states*, Phys. Rev. Lett., 94 (2005), p. 033402.

bib-files

These are text files that can contain different types of entries - **article, book, booklet, inbook, incollection, inproceedings, manual, mastersthesis, misc, phdthesis, proceedings, techreport, unpublished**

Each entry has fields (some are required, others are optional), e.g. **author, page, year, title, doi, abstract** etc., all enclosed in curly brackets.

How to execute/compile with BibT_EX

The very first time the execution sequence is (assuming that the latex source file is called ex2.tex):

```
latex ex2
bibtex ex2
latex ex2
latex ex2
```

Note that in the above example the bibtex command will take ex2.bbl as an argument. The .bbl extension is assumed by default (file ex2.bbl is generated after latex is executed). If no changes have been made in the references (bib-file) and how they are cited (in tex-file) then there is no need to run bibtex again.

Natbib package

There is Natbib package for L^AT_EX that can do some additional and very useful manipulations - combining reference numbers if they are cited sequentially. For example, instead of [3], [4], [5], [6] it will generate [3-6].

Here is how it can be invoked:

```
1 \documentclass[11pt]{article}
2 \usepackage[square,comma,sort&compress,numbers]{natbib}
```

Editing and managing bibliography files

There exist various software packages (some are cross-platform) that can help managing reference libraries. Some can work with bib-files (edit, import, or export).

- JabRef
- KBibTeX
- Mendeley
- Zotero
- EndNote