The `amsrefs` package

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Dedicated to the memory of

Michael J. Downes
1958–2003

Everything you really need to know

`http://www.ams.org/tex/amsrefs.html`

`tech-support@ams.org`

What is `amsrefs`?

`amsrefs` is a LaTeX package for managing bibliographies and reference lists.

- Replaces and/or reimplements the following:

  - `\cite` and `\nocite`
  - `\bibitem`
  - `\bibliography`
  - `\bibliographystyle`
  - `thebibliography`

- Implements much of BibTeX's formatting functionality directly in LaTeX.

- Can be used in conjunction with BibTeX or completely independently.

Why is `amsrefs`?

B<small>IB</small>T_EX is a great tool, but in practice it has some serious shortcomings.

- `.bib` files are highly-structured; `.bbl` files aren't:

```
@Book{Bourbaki70,                        \bibitem{Bourbaki70}
    title={Th\'eorie des ensembles},     Nicolas Bourbaki,
    author={Bourbaki, Nicolas},          \emph{Th\'eorie des ensembles},
    year={1970},                         Hermann, Paris, 1970.
    publisher={Hermann},
    address={Paris}
}
```

- Surprisingly low adoption rate. Only about 1/3 of the AMS authors who use L^AT_EX also use B<small>IB</small>T_EX.

- B<small>IB</small>T_EX doesn't fully understand L^AT_EX.

- `.bst` files are weird.

Why should I care? (Authors)

- Deferred formatting.

- Easier to use than BIBTeX.

- Lots of built-in functions:

  - Multiple labeling schemes (numeric, alphabetic, author-year).
  - Integration with `hyperref` and `backrefs`.
  - Citation sorting and compression.

- Publishers will (eventually) love you for using it.

- Best available implementation of the AMS reference style.

Why should I care? (Publishers)

- `amsrefs` produces fully-structured `.bbl` files, making it much easier to parse references and reuse documents.

- It's easier to create custom styles—no more `.bst` files.

How do I use `amsrefs`?

Step 1: The \bib-item

```
\bib{KostrikinS1965}{article}{
    author={Kostrikin, A. I.},
    author={\v{S}afarevi\v{c}, I. R.},
    title={Cartan pseudogroups and Lie $p$-algebras},
    journal={Dokl. Akad. Nauk SSSR},
    volume={168},
    date={1965},
    pages={740--742},
    translation={
        journal={Soviet Math. Dokl.},
        volume={6},
        year={1965},
        pages={715--718}
    }
}
```

Here's what the previous item might look like in a BIBT_EX database:

```
@ARTICLE{KostrikinS1965,
    Author={A. I. Kostrikin and I. R. {\v{S}}afarevi\v{c}},
    Title="Cartan pseudogroups and {Lie} $p$-algebras",
    JoUrNaL={Dokl. Akad. Nauk SSSR},
    Volume=168,
    Year=1965,
    Pages={740--742},
    Note={English transl., \emph{Soviet Math. Dokl.}, 6:715--718, 1965}
}
```

`amsrefs` vs. BIBT_EX format

`amsrefs`

- is case sensitive,

- requires braces around all field values,

- allows some fields (such as `author`) to be repeated,

- requires a stricter input format for names,

- is less persnickety about special characters in names,

- is more persnickety about capitalization in titles,

- has a richer set of fields, and

- allows some fields to have internal structure.

<div align="center">

`amsrefs` **data fields**

</div>

Simple fields

address	journal	pages	subtitle
booktitle	language	part	title
date	note	publisher	type
edition	number	series	volume
eprint	organization	status	

Repeatable fields

author	translator	issn
editor	isbn	review

Compound fields

book	contribution*	reprint	* also repeatable
conference	partial*	translation	

Some notable differences: the `place` field

The `year` and `month` fields have been replaced by a single `date` field, which should take one of the following forms:

```
date={1967-02-24}
date={1967-02}
date={1967}
```

This allows the style file maximum flexibility in formatting dates.
For "Winter", "Spring", "Summer", "Fall", either use 13, 14, 15, 16 (respectively) or just put in the text before the year:

```
date={1987-15}
date={Summer 1987}
```

Some notable differences: name fields

All names must be entered in the form

von Last, First, Jr.

Examples:

```
author={Arvind}
author={Jones, John Paul}
author={van Beethoven, Ludwig}
author={Ford, Henry, Jr.}
```

amsrefs **entry types**

- article

- book

- collection

- manual

- misc

- proceedings

- report

- thesis

- unpublished

How do I use `amsrefs`?

Step 2: Embedding the references in your document

```
\begin{biblist}

\bib{Bourbaki70}{book}{
    title={Th\'eorie des ensembles},
    author={Bourbaki, Nicolas},
    date={1970},
    publisher={Hermann},
    address={Paris}
}

\begin{biblist}
```

More about `biblist`

- Automatically adjusts the label width. (No need for `thebibliography`'s required argument.)

- Optional argument for customizing list environment.

```
\begin{biblist}[\normalfontsize]
\begin{biblist}[\setlength{\parsep}{6pt}]
```

- `biblist*`: resume numbering from where previous `biblist` left off.

How do I use `amsrefs`?

Step 3: Adding a heading

```
\begin{bibdiv}

\begin{biblist}

\bib{Bourbaki70}{book}{
    title={Th\'eorie des ensembles},
    author={Bourbaki, Nicolas},
    date={1970},
    publisher={Hermann},
    address={Paris}
}

\begin{biblist}

\begin{bibdiv}
```

More about `bibdiv`

- Automatically generates `\section` or `\chapter` heading depending on document style.

- Uses `\bibname` or `\refname`.

- Use `bibchapter` or `bibsection` if you need to force a particular style.

- Optional argument to override the text of the heading:

  ```
  \begin{bibchapter}[Annotated Bibliography]
  ```

- For maximum flexibility, just roll your own:

  ```
  \subsection{Further reading}
  ```

How do I use `amsrefs`

Step 4: Citing the bibliography

LaTeX-style \cites still work:

```
\cite{key}
\cite{key1,key2}
\cite[chapter 3]{key}
```

But these have some well-known problems:

- How do you get [1, chapter 3; 2]?

  `\cite[chapter 3]{key1,key2}` produces [1; 2, chapter 3]

- How often have you been tripped up by this?

  ```
  \begin{thm}[\cite[chapter 2]{key}]
  ```

The `amsrefs` way

- Single cites:

  ```
  \cite{key}
  \cite{key}*{chapter 3}
  ```

- Multiple cites:

  ```
  \citelist{\cite{key1}*{chapter 3} \cite{key2}}
  ```

- Multiple cites for lazy people:

  ```
  \cites{key1,key2}
  ```

Author-year citations (1)

$$\texttt{\textbackslash cite\{RY77\}} \; \longrightarrow \; \text{(Rupp and Young, 1977)}$$

$$\texttt{\textbackslash ycite\{RY77\}} \; \longrightarrow \; \text{(1977)}$$

$$\texttt{\textbackslash ocite\{RY77\}} \; \longrightarrow \; \text{Rupp and Young (2004)}$$

```
The question first arose in systems theory \cite{RY77}
```

The question first arose in systems theory (Rupp and Young, 1977).

```
Rupp and Young \ycite{RY77} have investigated \dots
```

Rupp and Young (1977) have investigated ...

```
\dots\ for further details, see \ocite{RY77}.
```

... for further details, see Rupp and Young (1977).

Author-year citations (2)

Other variations:

   \citeauthor{RY77} $\longrightarrow$ Rupp and Young

   \fullcite{LMC}, $\longrightarrow$ always "Larry, Moe, and Curly";
   \fullocite{LMC}   never "Larry et al.'

             \ycites

             \ocites

How do I use `amsrefs`?

Step 5: Putting it all together

```
\documentclass{article}

\usepackage{amsrefs}

\begin{document}

See \cite{KostrikinS1965}.

\begin{bibdiv}

\begin{biblist}

\bib{Bourbaki70}{book}{
    title={Th\'eorie des ensembles},
    author={Bourbaki, Nicolas},
    date={1970},
    publisher={Hermann},
    address={Paris}
}

\end{biblist}

\end{bibdiv}

\end{document}
```

Using an `.ltb` file (1)

```
\documentclass{article}

\usepackage{amsrefs}

\begin{document}

For a gentle introduction to set theory, see \cite{Bourbaki70}.

\begin{bibdiv}
\begin{biblist}

\bibselect{sample}

\end{biblist}
\end{bibdiv}

\end{document}
```

Using an `.ltb` file (2)

`sample.ltb`:

```
\documentclass{article}
\usepackage{amsrefs}

\begin{document}
\begin{bibdiv}
\begin{biblist}

\bib{Bourbaki70}{book}{
    title={Th\'eorie des ensembles},
    author={Bourbaki, Nicolas},
    date={1970},
    publisher={Hermann},
    address={Paris}
}

\end{biblist}
\end{bibdiv}
\end{document}
```

<div align="center">

`\bibselect`

</div>

- Very similar to `\bibliography`.

- Causes LaTeX to generate a `.bbl` file.

- Can be used multiple times:

  ```
  \bibselect{file1}
  \bibselect{file2}
  ```

- Can take a list of files:

  ```
  \bibselect{file1,file2}
  ```

- Has a ∗-variant that imports *everything*:

  ```
  \bibselect*{file1}
  ```

\bibselect: **the bad news**

Does no sorting.

Items will appear in your bibliography in the order they are encountered inside the `.ltb` files.

Using amsrefs with BIBTEX

```
\documentclass{article}

\usepackage{amsrefs}

\begin{document}

For a gentle introduction to set theory, see \cite{Bourbaki70}.

\bibliography{sample}

\end{document}
```

Package options: `initials`

$$\text{Jones, David} \longrightarrow \text{D. Jones}$$

$$\text{Gagarin, Yuri} \longrightarrow \text{Yu. Gagarin}$$

$$\text{Bing, R H} \longrightarrow \text{R H Bing}$$

$$\text{Katzenbach, Nicholas deBelleville} \longrightarrow \text{N. deB. Katzenbach}$$

$$\text{Gagarin, Yu.} \longrightarrow \text{Yu. Gagarin}$$

$$\text{Katzenbach, N. deB.} \longrightarrow \text{N. deB. Katzenbach}$$

Package options: citation label formats

- Default is numeric: [1], [2], . . .

- `alphabetic`: Like BIBTEX's `alpha` style: [Bou70], [KŠ65]

- `alphabetic + y2k`: [Bou1970], [KŠ1965]

- `shortalphabetic`: [B], [KŠ]

- `author-year`: Bourbaki, Nicolas. 1970.

Other package options (highlights)

- `abbrev`

  - `initials`
  - `short-months`
  - `short-journals`
  - `short-publishers`

- `backrefs`

- `bibtex-style`

- `non-compressed-cites`: [1, 2, 3, 4] instead of [1–4]

- `non-sorted-cites`: [4, 2, 1, 3] instead of [1, 2, 3, 4]

Advanced features

- Compound fields.

- Cross-references.

- Field attributes.

- Abbreviations.

- Defining/customizing bibliography specifications.

Advanced features: Compound fields (1)

```
\bib{KostrikinS1965}{article}{
    author={Kostrikin, A. I.},
    author={\v{S}afarevi\v{c}, I. R.},
    title={Cartan pseudogroups and Lie $p$-algebras},
    journal={Dokl. Akad. Nauk SSSR},
    volume={168},
    date={1965},
    pages={740--742},
    translation={
        journal={Soviet Math. Dokl.},
        volume={6},
        year={1965},
        pages={715--718}
    }
}
```

[1] A. I. Kostrikin and I. R. Šafarevič, *Cartan pseudogroups and Lie p-algebras*, Dokl. Akad. Nauk SSSR **168** (1965), 740–742; English transl., Soviet Math. Dokl. **6** (1965), 715–718.

Advanced features: Compound fields (2)

```
\bib{Burkholder1986a}{article}{
    author={Burkholder, Donald L.},
    title={Martingales and Fourier analysis in Banach spaces},
    conference={
        title={C.I.M.E. Lectures},
        address={Varenna, Italy},
        date={1985}
    },
    book={
        series={Lecture Notes in Math.},
        volume={1206},
        publisher={Springer-Verlag},
        address={Berlin and New York},
        date={1986},
    },
    pages={61--108}
}
```

[1] Donald L. Burkholder, *Martingales and Fourier analysis in Banach spaces*, C.I.M.E. Lectures (Varenna, Italy, 1985), Lecture Notes in Math., vol. 1206, Springer-Verlag, Berlin and New York, 1986, pp. 61–108.

Advanced features: Compound fields (3)

```
\bib{Lieber1944}{book}{
    title={The Education of T. C. Mits},
    edition={revised and enlarged},
    author={Lieber, Lillian R.},
    contribution={
        type={illustrations},
        author={Lieber, Hugh Gray},
    },
    publisher={W. W. Norton and Company},
    address={New York},
    date={1944}
}
```

[1] Lillian R. Lieber, *The Education of T. C. Mits*, revised and enlarged, with illustrations by Hugh Gray Lieber, W. W. Norton and Company, New York, 1944.

Advanced features: Compound fields (4)

```
\bib{Zho-fan1972}{article}{
    author={Zho-fan, Z.},
    title={Monomials},
    partial={
        part={I},
        journal={Tot. Math.},
        volume={19},
        date={1972},
        pages={335--350}
    },
    partial={
        part={II},
        journal={Tot. Math.},
        volume={20},
        date={1973},
        pages={19--37}
    }
}
```

[1] Z. Zho-fan, *Monomials*. I, Tot. Math. **19** (1972), 335–350; II, Tot. Math. **20** (1973), 19–37.

Advanced features: Compound fields (5)

```
\bib{Sokal96}{article}{
    title={Trangressing the boundaries},
    subtitle={Toward a transformative hermeneutics of quantum gravity},
    author={Sokal, Alan},
    journal={Social Text},
    volume={46/47},
    date={1996},
    pages={217--252},
    reprint={
        title={Fashionable Nonsense},
        subtitle={Postmodern Intellectuals' Abuse of Science},
        author={Sokal, Alan},
        author={Bricmont, Jean},
        publisher={Picador USA},
        address={New York},
        date={1998}
    }
}
```

[1] Alan Sokal, *Trangressing the boundaries*: *Toward a transformative hermeneutics of quantum gravity*, Social Text **46/47** (1996), 217–252; reprinted in Alan Sokal and Jean Bricmont, *Fashionable Nonsense*: *Postmodern Intellectuals' Abuse of Science*, Picador USA, New York, 1998.

Advanced features: Compound fields (6)

```
\bib{Tchebycheff1859}{article}{
    author={Tchebycheff, P. L.},
    title={Sur les questions de minima qui se rattachent \'{a} la
    repr\'{e}senta\-tion approximative des fonctions},
    journal={M\'{e}m. Imp. Acad. Sci. St. Petersbourg},
    series={6},
    volume={7},
    date={1859},
    pages={199\ndash291},
    reprint={
        copula={reprinted in his},
        title={Oeuvres},
        volume={I},
        publisher={Imprimerie Imp. Acad. Sci.},
        address={St. Petersburg},
        date={1899},
        pages={273--378},
    }
}
```

[1] P. L. Tchebycheff, *Sur les questions de minima qui se rattachent à la représentation approximative des fonctions*, Mém. Imp. Acad. Sci. St. Petersbourg **7** (1859), 199–291; reprinted in his *Oeuvres*, Vol. I, Imprimerie Imp. Acad. Sci., St. Petersburg, 1899.

Advanced features: Cross-references

```
\bib*{STOC5}{book}{
    conference={
        title={Fifth Annual ACM Symposium on Theory of Computing},
        date={1973},
        address={Austin, Texas}
    }
}


\bib{StockmeyerM73}{article}{
    title={Word Problems Requiring Exponential Time},
    subtitle={Preliminary Report},
    author={Stockmeyer, L. J.},
    author={Meyer, A. R.},
    pages={1--9},
    xref={STOC5}
}
```

[1] L. J. Stockmeyer and A. R. Meyer, *Word Problems Requiring Exponential Time*: *Preliminary Report*, Fifth Annual ACM Symposium on Theory of Computing (Austin, Texas, 1973), pp. 1–9.

Advanced features: Field attributes (1)

```
\bib{Li1993}{misc}{
    title={Fong Sai-Yuk},
    date={1993},
    author={Li, Lian Jie}*{inverted={yes}}
}
```

[1] Li Lian Jie, *Fong Sai-Yuk*, 1993.

Advanced features: Field attributes (2)

```
\bib{Denecke1982}{article}{
    author={Denecke, K.},

    title={Pr\"aprimale Algebren, die arithmetische Variet\"aten
        erzeugen}*{language={german}},

    booktitle={Universal Algebra and Applications},
    series={Banach Center Publ.},
    volume={9},
    publisher={PWN},
    address={Warsaw},
    date={1982},
    pages={391--398}
}
```

Advanced features: Abbreviations

```
\DefineName{dmj}{Jones, David M.}

\DefinePublisher{ams}{AMS}{American Mathematical Society}{Providence}

\DefineJournal{jams}{0894-0347}
  {J. Amer. Math. Soc.}
  {Journal of the American Mathematical Society}


author={dmj} (or editor={dmj} or translator={dmj})

journal={jams}

publisher={ams}
```

Advanced features: \BibSpec

```
\BibSpec{thesis}{%
    +{}  {\PrintAuthors}                 {author}
    +{,} { \textit}                      {title}
    +{:} { \textit}                      {subtitle}
    +{,} { \PrintThesisType}             {type}
    +{,} { }                             {organization}
    +{,} { }                             {address}
    +{,} { \PrintDateB}                  {date}
    +{,} { \eprint}                      {eprint}
    +{,} { }                             {status}
    +{}  { \parenthesize}                {language}
    +{}  { \PrintTranslation}            {translation}
    +{;} { \PrintReprint}                {reprint}
    +{.} { }                             {note}
    +{.} {}                              {transition}
    +{}  {\SentenceSpace \PrintReviews}  {review}
}
```

Advanced features: \BibSpec (2)

```
\newcommand{\PrintAuthors}[1]{%
    \PrintNames{}{}{#1}%
}


\newcommand{\PrintEditorsA}[1]{%
    \PrintNames{}{ (ed\Plural{s}.)}{#1}%
}


\newcommand{\PrintTranslatorsC}[1]{%
    \PrintNames{translated by }{}{#1}%
}
```

Future directions

- Internationalization/Babelization

- Tighter integration with BIBT$_{\text{E}}$X

- More styles!