

keytheorems package

version 0.1.0

github.com/mbertucci47/keytheorems

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September 8, 2024

Abstract

An expl3-implementation of a key-value interface to `amsthm`, implementing most of the functionality provided by `thmtools`. Several issues encountered with `thmtools` are avoided and a few new features are added (see the README).

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1 Dependencies

Without using the `tcolorbox`^{→P.7} or `tcolorbox-no-titlebar`^{→P.7} options, the package loads the `aliascnt`, `amsthm`, `refcount`, and `translations` packages.

2 Global Options

`\keytheoremset{⟨options⟩}`

Every key in this section can be given as a package option with `\usepackage[<options>]{keytheorems}` or in `\keytheoremset{<options>}`, with the exception that `continues-code`^{→P.2} can only be used in the latter.

overload (initially unset)

Redefines `\newtheorem` to internally use the `keytheorems` machinery. The syntax remains the same. This is automatically set by `thmtools-compat`.

thmtools-compat (initially unset)

For compatibility with `thmtools` syntax. Currently defines the commands in the left column below. The right column lists the corresponding `keytheorems` replacement.

thmtools command	keytheorems replacement
<code>\declaretheorem</code>	<code>\newkeytheorem</code>
<code>\declaretheoremstyle</code>	<code>\newkeytheoremstyle</code> ^{→P.7}
<code>\listoftheorems</code>	<code>\listofkeytheorems</code> ^{→P.9}
<code>\addtotheoremheadhook</code>	
<code>\addtotheoremheadhook</code>	<code>\addtotheoremhook</code> ^{→P.11}
<code>\addtotheoremheadhook</code>	
<code>\addtotheoremheadhook</code>	
<code>restatable</code> environment	<code>store</code> ^{→P.3} key

Also defined are the `shaded` and `thmbox` keys, implemented internally with `tclobox` rather than the `shadethm` and `thmbox` packages, respectively.

store-all (initially unset)

Tells `keytheorems` to grab the body of each theorem so it can later be printed with the `print-body`^{→P.11} option of `\listofkeytheorems`^{→P.9}. Note that this means a theorem body *cannot* contain verbatim material.

restate-counters=*<comma-list of counters>* (initially `{equation}`)

Additional counters whose values are preserved when a theorem is restated. This key does not reset the list, so you don't need to include `equation` in *<comma-list>*.

continues-code=*<code with #1>* (initially `\GetTranslation{keythms_continues}\pageref{#1}`)

The code used to typeset the note produced by the `continues`^{→P.3} key. If English or an unknown language is used, defaults to `continuing from p.\, \pageref{#1}`. Currently (likely inaccurate!) translations exist for French, German, and Spanish.

qed-symbol=*<symbol>* (initially `\openbox`)

Redefines `\qedsymbol` to be *<symbol>*.

auto-translate=`true|false` (default `true`, initially `true`)

If `false`, `keytheorems` does not automatically translate the title text for `\listofkeytheorems`^{→P.9} and the note produced by the `continues`^{→P.3} key. These texts can be manually customized with the `title`^{→P.10} and `continues-code` keys, respectively.

3 Defining Theorems

\newkeytheorem{*<env name>*}[*<options>*]

Defines a theorem environment *<env name>* which itself takes a few options (see subsection 3.1). You can also declare multiple theorems at once by replacing *<env name>* with a comma-list of names, e.g. `\newkeytheorem{theorem, lemma, proposition}[<options>]`.

By default, the theorem's printed name is a title-cased *<env name>*. This can be changed with the `name`^{→P.4} key. All *<options>* are described in subsections 3.2 and 3.3.

```
% preamble
\newkeytheorem{theorem}

% document
\begin{theorem}
Some text
\end{theorem}
```

Theorem 1. *Some text*

3.1 Keys available to theorem environments

As in `amsthm`, theorems can take an optional argument that contains a note or heading.

```
\begin{theorem}[some heading]
Some text
\end{theorem}
```

Theorem 2 (some heading). *Some text*

Alternatively, the optional argument may contain any of the following keys.

note=*<text>* (initially unset)

Alias **name**. This is the key-value equivalent of the optional argument described above. This syntax, however, allows the argument to contain other keys.

```
\begin{theorem}[some heading]
Some text
\end{theorem}
\begin{theorem}[note=another heading]
Some more text
\end{theorem}
```

Theorem 3 (some heading). *Some text*

Theorem 4 (another heading). *Some more text*

short-note=*<text>* (initially unset)

Alias **short-name**. This replaces the value of **note** when displayed in `\listofkeytheorems`^{P.9}.

label=*<label name>* (initially unset)

This is the key-value equivalent of `\begin{theorem} \label{<label name>}`.

```
\begin{theorem}[label=foo]
Some text
\end{theorem}
\ref{foo}
```

Theorem 5. *Some text*

5

continues=*<label name>* (initially unset)

Pick up a theorem where you left off. The theorem number remains the same. The printed text can be customized with the `continues-code`^{P.2} option. The starred version also copies the theorem note, if it exists.

```
\begin{theorem}[continues=foo]
\dots and some more text.
\end{theorem}
```

Theorem 5 (continuing from p. 3). *... and some more text.*

store=*<tag>* (initially unset)

Alias **restate**. Stores the the theorem to be restated at any point in the document with `\getkeytheorem`^{P.8}.

```

\begin{theorem}[store=blub]
A theorem worth restating.
\end{theorem}
More brilliant mathematics.
\getkeytheorem{blub}

```

Theorem 6. *A theorem worth restating.*

More brilliant mathematics.

Theorem 6. *A theorem worth restating.*

A theorem given this key *cannot* contain verbatim material or other unexpected catcodes, such as a tikz-cd diagram. The latter issue can be averted with the `ampersand-replacement` key.

```

% preamble
\usepackage{tikz}
\usetikzlibrary{cd}

% document
\begin{lemma}[store=diagram]
Some commutative diagram:
\[\begin{tikzcd}[ampersand
\rightarrow replacement=\&]
X\times_S Y \ar[r] \ar[d] \& X \ar[d]
\rightarrow \\
Y \ar[r] \& S
\end{tikzcd}\]
\end{lemma}
\dots
\getkeytheorem{diagram}

```

Lemma 7. *Some commutative diagram:*

$$\begin{array}{ccc}
 X \times_S Y & \longrightarrow & X \\
 \downarrow & & \downarrow \\
 Y & \longrightarrow & S
 \end{array}$$

...

Lemma 7. *Some commutative diagram:*

$$\begin{array}{ccc}
 X \times_S Y & \longrightarrow & X \\
 \downarrow & & \downarrow \\
 Y & \longrightarrow & S
 \end{array}$$

`listhack=true|false`

(initially false)

Meant only to be used with the `break`^{P.8} style key for a theorem starting with a list. Compare:

```

% preamble
\newkeytheoremstyle{breaksty}{break}
\newkeytheorem{observation}[style=breaksty]

% document
\begin{observation}
\begin{enumerate}
\item First item
\end{enumerate}
\end{observation}

\begin{observation}[listhack=true]
\begin{enumerate}
\item First item
\end{enumerate}
\end{observation}

```

Observation 1. *1. First item*

Observation 2.

1. First item

Note that the value `true` must be explicitly set so that `listhack` is not interpreted as the note text.

`seq=<name>`

(initially unset)

Adds the theorem to a custom sequence `<name>` that can then be listed with `\listofkeytheorems[seq=<name>]`. See `seq`^{P.10} for more details.

3.2 Keys inherited from `thmtools`

These are the `[<options>]` available to `\newkeytheorem`. Except for `name` and `style`^{P.5}, each key below can also be used in `\newkeytheoremstyle`^{P.7}. For more description, see the `thmtools` package.

`name=<display name>`

(initially title-cased `<env name>`)

Aliases `title` and `heading`.

```
% preamble
\newkeytheorem{mythm}[name=Some Name]

% document
\begin{mythm}
Some text
\end{mythm}
```

Some Name 1. *Some text*

`numbered=true|false|unless-unique`

(default true, initially true)

For compatibility with thmtools, also accepts the values `yes`, `no`, and `unless unique`.

```
% preamble
\newkeytheorem{theorem*}[
  name=Theorem, numbered=false
]

% document
\begin{theorem*}
An unnumbered theorem.
\end{theorem*}
```

Theorem. *An unnumbered theorem.*

`parent=<counter>`

(initially unset)

Aliases `numberwithin` and `within`.

```
% preamble
\newkeytheorem{conjecture}[parent=section]

% document
\begin{conjecture}
The first number is the section.
\end{conjecture}
```

Conjecture 3.1. *The first number is the section.*

`sibling=<counter>`

(initially unset)

Aliases `numberlike` and `sharenumber`.

```
% preamble
\newkeytheorem{lemma}[sibling=theorem]

% document
\begin{lemma}
This shares its counter with
\texttt{theorem}.
\end{lemma}
```

Lemma 8. *This shares its counter with theorem.*

`style=<style name>`

(initially unset)

Accepts any `<style name>` defined by `\newkeytheoremstyle→ P. 7`, as well as any of the predefined amsthm styles: `plain`, `definition`, and `remark`.

```
% preamble
\newkeytheorem{remark}[style=remark]

% document
\begin{remark}
Some text
\end{remark}
```

Remark 1. Some text

`preheadhook=<code>`

(initially unset)

`postheadhook=<code>`

(initially unset)

`prefoothook`= $\langle code \rangle$ (initially unset)
`postfoothook`= $\langle code \rangle$ (initially unset)

Details in [section 7](#).

<pre>% preamble \newkeytheorem{test}[preheadhook=PREHEAD, postheadhook=POSTHEAD, prefoothook=PREFOOT, postfoothook=POSTFOOT] % document \begin{test} Some text \end{test}</pre>	<pre>PREHEAD Test 1. <i>POSTHEAD</i>Some text <i>PREFOOT</i> POSTFOOT</pre>
--	--

`refname`= $\langle ref name \rangle$ or $\{\langle singular name \rangle, \langle plural name \rangle\}$ (initially $\langle display name \rangle$)

If a single string, then the name used by `hyperref`'s `\autoref` and `cleveref`'s `\cref`. If two strings separated by a comma, then the second string is the plural form used by `\cref`.

`Refname`= $\langle ref name \rangle$ or $\{\langle singular name \rangle, \langle plural name \rangle\}$ (initially $\langle display name \rangle$)

Same as `refname` but for `\Autoref` and `\Cref`. Note that `\Autoref` is defined by `keytheorems`, but requires `hyperref` to work.

<pre>% preamble \newkeytheorem{prop}[name=Proposition, refname={proposition,propositions}, Refname={Proposition,Propositions}] % document \begin{prop}[label=abc] Some text \end{prop} \begin{prop}[label=def] Some more text \end{prop} \begin{theorem} Consider \cref{abc,def}. \Autoref{abc} \dots \end{theorem}</pre>	<pre>Proposition 1. <i>Some text</i> Proposition 2. <i>Some more text</i> Theorem 9. <i>Consider propositions 1 and 2. Proposition 1 ...</i></pre>
--	---

`qed`= $\langle symbol \rangle$ (default `\openbox`, initially unset)

Adds $\langle symbol \rangle$ to the end of the theorem body. If no value is given, the symbol \square is used.

<pre>% preamble \newkeytheorem{example}[qed] \newkeytheorem{solution}[qed=\$\clubsuit\$] % document \begin{example} Some text \end{example} \begin{solution} Some more text \end{solution}</pre>	<pre>Example 1. <i>Some text</i> \square Solution 1. <i>Some more text</i> \clubsuit</pre>
---	---

3.3 Keys added by `keytheorems`

`tcolorbox={\langle tcolorbox options \rangle}` (initially unset)

This key specifies that the theorem be placed inside a `tcolorbox` environment with `\langle options \rangle`. The theorem head is typeset as a `tcolorbox` title; to avoid this see `tcolorbox-no-titlebar`.

```
% preamble
\tcbset{
  defstyle/.style={
    arc=0mm,
    colback=blue!5!white,
    colframe=blue!75!black
  },
}
\newkeytheorem{corollary}[tcolorbox]
\newkeytheorem{definition}[
  style=definition,
  tcolorbox={defstyle}
]

% document
\begin{corollary}
Some text
\end{corollary}
\begin{definition}
Some more text
\end{definition}
```

Corollary 1.

Some text

Definition 1.

Some more text

`tcolorbox-no-titlebar={\langle tcolorbox options \rangle}` (initially unset)

Same usage as `tcolorbox` but the theorem head is typeset as usual, not as a `tcolorbox` title.

```
% preamble
\newkeytheorem{boxcor}[
  tcolorbox-no-titlebar={
    colback=red!10
  },
  name=Corollary,sibling=corollary
]

% document
\begin{boxcor}
Some text
\end{boxcor}
```

Corollary 2. *Some text*

4 Theorem Styles

`\newkeytheoremstyle{\langle name \rangle}{\langle options \rangle}`

This is `keytheorems`' version of `thmtools`' `\declaretheoremstyle[\langle options \rangle]{\langle name \rangle}`. Since it makes little sense to define a style with no keys, we've made the `\langle options \rangle` argument mandatory. Note that unlike `amsthm`'s `\newtheoremstyle`, this command will error if a style has already been defined. To overwrite an existing style, there is the analogous `\renewkeytheoremstyle`. For completeness, there is also `\declarekeytheoremstyle` and `\providekeytheoremstyle`.



For the AMS classes `amsart`, `amsbook`, and `amspdoc`, as well as the `amsart`-based `acmart`, the initial key values are slightly different than what's below in order to match those class's defaults.

4.1 Keys inherited from thmtools

The following keys have the same meaning and syntax as the corresponding thmtools keys. In addition to the list below, most of the keys available to `\newkeytheorem`^{P.2} can be used in `\newkeytheoremstyle`.

`spaceabove`= $\langle length \rangle$ (initially `\topsep`)

`spacebelow`= $\langle length \rangle$ (initially `\topsep`)

`bodyfont`= $\langle font\ declarations \rangle$ (initially `\itshape`)

`headindent`= $\langle length \rangle$ (initially `0pt`)

`headfont`= $\langle font\ declarations \rangle$ (initially `\bfseries`)

`headpunct`= $\langle code \rangle$ (initially `\{.\}`)

`postheadspace`= $\langle length \rangle$ (initially 5pt plus 1pt minus 1pt)

Do not use this with the `break` key.

`break` (initially unset)

Do not use this with the `postheadspace` key.

`notefont`= $\langle font\ declarations \rangle$ (initially `\fontseries\mddefault\upshape`)

`notebraces`= $\{\langle left\ brace \rangle\}\{\langle right\ brace \rangle\}$ (initially `\{\}\{\}`)

`headstyle`=`margin`|`swapnumber`| $\langle code\ using\ \backslash NAME, \backslash NUMBER, and \backslash NOTE \rangle$

Alias `headstyle`. Within $\langle code \rangle$, the commands `\NAME`, `\NUMBER`, and `\NOTE` correspond to the formatted parts of the theorem head.

4.2 Keys added by keytheorems

`inherit-style`= $\langle style\ name \rangle$ (initially unset)

Inherit the keys of any style declared with `\newkeytheoremstyle`^{P.7}. Additionally, the three styles predefined by amsthm are possible values: `plain`, `definition`, and `remark`.

5 Restating Theorems

When a theorem is given the `store`^{P.3} key, the contents of the theorem are saved and written to a `.thlist` file. At the start of the next run, this file is input at the beginning of the document and allows you to retrieve the stored theorems at any point, before or after the original theorem.

`\getkeytheorem`[$\langle property \rangle$]{ $\langle tag \rangle$ }

Retrieves the theorem given the key `store`= $\langle tag \rangle$. An optional $\langle property \rangle$ can be given to retrieve only the corresponding part of the theorem. Currently only the property `body` is implemented, which retrieves the (unformatted) body of the theorem.

```
\getkeytheorem{mytag}
```

```
\begin{example}[store=mytag]
```

```
Fascinating example.
```

```
\end{example}
```

```
\getkeytheorem[body]{mytag}
```

Example 2. *Fascinating example.* □

Example 2. *Fascinating example.* □

Fascinating example.

`\IfRestatingTF{⟨true code⟩}{⟨false code⟩}`

Executes `⟨true code⟩` if being retrieved with `\getkeytheorem` and `⟨false code⟩` if in the original theorem.

```
\begin{example}[store=hmm]
I am the
\IfRestatingTF{restated}{original}
example!
\end{example}

\getkeytheorem{hmm}
```

Example 3. *I am the original example!* □

Example 3. *I am the restated example!* □

6 Listing Theorems

`\listofkeytheorems[⟨options⟩]`

`\keytheoremset{⟨options⟩}`

`\listofkeytheorems`

List of Theorems

1	Theorem	2
2	Theorem (some heading)	3
3	Theorem (some heading)	3
4	Theorem (another heading) . .	3
5	Theorem	3
5	Theorem (continuing from p. 3)	3
6	Theorem	3
7	Lemma	4
1	Observation	4
2	Observation	4
1	Some Name	4
	Theorem	5
3.1	Conjecture	5
8	Lemma	5
1	Remark	5
1	Test	6
1	Proposition	6
2	Proposition	6
9	Theorem	6
1	Example	6
1	Solution	6
1	Corollary	7
1	Definition	7
2	Corollary	7
2	Example	8
3	Example	8

6.1 Keys inherited from `thmtools`

`numwidth=⟨length⟩` (initially 2.3em)

`ignore={⟨comma-list of env names⟩}` (initially unset)

`show={⟨comma-list of env names⟩}` (initially all theorems)

`onlynamed={⟨comma-list of env names⟩}` (initially unset)

`ignoreall` (initially unset)

<pre> \listofkeytheorems[ignoreall,show=theorem] \listofkeytheorems[ignoreall, show=conjecture, title=List of Conjectures] </pre>	<div> <div>List of Theorems</div> <div> 1 Theorem 2 2 Theorem (some heading) . . . 3 3 Theorem (some heading) . . . 3 4 Theorem (another heading) . 3 5 Theorem 3 5 Theorem (continuing from p. 3) 3 6 Theorem 3 9 Theorem 6 </div> </div> <div> <div>List of Conjectures</div> <div> 3.1 Conjecture 5 </div> </div>
---	--

`showall` (initially set)

`title=⟨text⟩` (initially `\GetTranslation{keythms_listof_title}`)

Defaults to “List of Theorems” if English or an unknown language is used. Currently French, German, and Spanish have (likely inaccurate!) translations. A translation can be added with a GitHub pull request or manually with `\DeclareTranslation{⟨lang⟩}{keythms_listof_title}{⟨text⟩}`.

`swapnumber=true|false` (initially false)

6.2 Keys added by `keytheorems`

`onlynumbered={⟨comma-list of env names⟩}` (initially unset)

Similar to `onlynamed`, but lists only those theorems which are numbered. This is useful if you’d like to exclude things like unnumbered definitions and remarks from the list of theorems.

`seq=⟨name⟩` (initially unset)

Used to list only the theorems added to the custom sequence `⟨name⟩` with the `seq`^{P.4} theorem key. This is the only way to fully customize which theorems appear in the list of theorems.

`title-code=⟨code with #1⟩` (initially `\section*{#1}`)

If `\chapter` is defined, then initially this is instead `\chapter*{#1}`.

`no-title` (initially unset)

Suppresses the title of the list of theorems. Useful for custom ordering of the list.

<pre> \keytheoremset{ignoreall} \listofkeytheorems[show=example] \listofkeytheorems[show=solution,no-title] </pre>	<div> <div>List of Theorems</div> <div> 1 Example 6 2 Example 8 3 Example 8 1 Solution 6 </div> </div>
--	---

`note-code=⟨code with #1⟩` (initially `{ (#1) }`)

Formats the optional note in the list of theorems.

`print-body` (initially unset)

Instead of listing the theorem headings, the theorems are restated with their body text. Not very useful without the `store-all`^{P.2} load-time option.

`no-continues=true|false` (initially false)

Suppresses the printing of theorems given the `continues`^{P.3} key in the list of theorems.

`no-chapter-skip=true|false` (initially false)

By default a small vertical space is inserted between each chapter's chunk of theorems. Setting this key to `true` removes this space.

`chapter-skip-length=<dimension>` (initially 10pt)

Controls the amount of space inserted between chunks.

6.3 Adding code to list of theorems

There are analogous commands to `\addcontentsline` and `\addtocontents` for adding entries or arbitrary code to the list of theorems.



You *must* use these commands rather than the aforementioned because the `.thlist` file is also used to define restated theorems and cannot contain unexpected code.

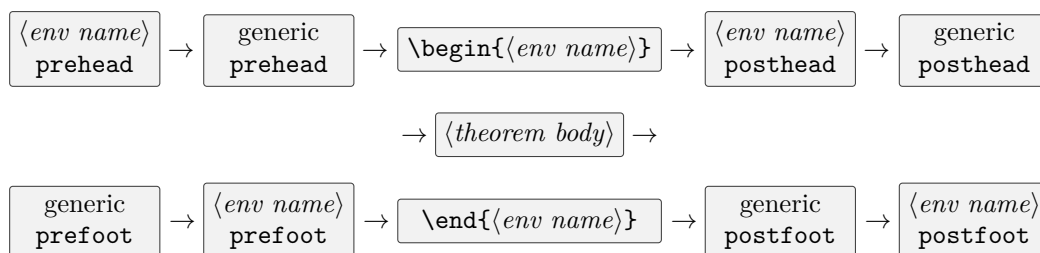
`\addtheoremcontentsline{<level>}{<text>}`

`\addtotheoremcontents{<code>}`

7 Theorem Hooks

`\addtotheoremhook[<env name>]{<hook name>}{<code>}`

`<hook name>` can be `prehead`, `posthead`, `prefoot`, `postfoot`, or `restated`. If no `<env name>` is given, the `<code>` is added to the “generic” hook, i.e. applied to all theorems. As in `thmtools`, the order of hooks is as follows:



The `restated` hook is applied at the start of theorems retrieved with `\getkeytheorem`, before the `prehead` hook. This can be useful for disabling commands such as `\footnote` in the restated theorems, e.g.

```
\addtotheoremhook{restated}{%
  \renewcommand\footnote[2][]{}%
}
```

By default, `keytheorems` disables the `\label` and `\RecordProperties` commands in restated theorems.

In `thmtools`, the `prefoot` and `postfoot` hooks always prepend code, i.e. the code

```
\addtotheoremhook{A}
\addtotheoremhook{B}
```

results in BA after the theorem. With `keytheorems`, code is added in the order declared, meaning

```
\addtotheoremhook{postfoot}{A}
\addtotheoremhook{postfoot}{B}
```

results in AB after the theorem. This is the behavior of the L^AT_EX kernel hooks that `keytheorems` uses under the hood.

Right now, code added using the hook keys `preheadhook`^{→P.5}, etc. is outermost, meaning executed first in `prehead` and `posthead` and last in `prefoot` and `postfoot`. This may change if I think of good reasons to do so...

8 Implementation

```
1 \NeedsTeXFormat{LaTeX2e}[2024/06/01]
2 \ProvidesExplPackage{keytheorems}{2024-09-06}{0.1.0}{l3keys interface to amsthm}
3
4 %%% TESTING
5 % \debug_on:n { all }
6 %%% END TESTING
7
8 \RequirePackage{aliascnt} % for sibling theorems
9 \RequirePackage{amsthm}
10 % ^ams classes have way of ignoring this so don't need to check if they're loaded
11 \RequirePackage{refcount} % for \getrefnumber
12 \RequirePackage{translations} % for translating "List of Theorems"
13
14 %%%%%%%%%%%%%%%
15 %%% Error Messages %%%
16 %%%%%%%%%%%%%%%
17
18 \msg_new:nnn { keytheorems } { thmtools-before }
19 {
20     keytheorems~is~not~compatible~with~thmtools.~
21     Try~replacing~\protect\usepackage{thmtools}~with~
22     \protect\usepackage{thmtools-compat}{keytheorems}.
23 }
24 \msg_new:nnn { keytheorems } { thmtools-after }
25 {
26     keytheorems~is~not~compatible~with~thmtools.~
27     This~will~not~work~as~you~think!~
28     Try~replacing~\protect\usepackage{thmtools}~with~
29     \protect\usepackage{thmtools-compat}{keytheorems}.
30 }
31 \msg_new:nnn { keytheorems } { no-stored-theorem }
32 {
33     No~stored~theorem~'#1'~found!~
34     Try~compiling~again.~If~that~doesn't~work,~
35     check~the~spelling~of~'#1'.
36 }
37 \msg_new:nnn { keytheorems } { undefined-thm-hook }
38 {
39     No~theorem~hook~'#1'.~Check~the~spelling.~
40     Should~be~one~of~'prehead',~'posthead',~'prefoot',~'postfoot',~or~'restated'.
41 }
42 \msg_new:nnn { keytheorems } { hyperref-Autoref }
43 {
44     You~have~not~loaded~hyperref.~The~\protect\Autoref\space command~needs~
45     hyperref~to~work.
46 }
```

```

47 \msg_new:nnn { keytheorems } { no-Autorefname }
48 {
49   No~Autoref~name~for~'#1'.~
50   Please~define~\c_backslash_str #1Autorefname.
51 }
52 \msg_new:nnn { keytheorems } { thmstyle-undefined }
53 {
54   Theorem~style~'#1'~undefined.~
55   Use~\protect\newkeytheoremstyle\space instead.
56 }
57 \msg_new:nnn { keytheorems } { thmstyle-defined }
58 {
59   Theorem~style~'#1'~already~defined.~
60   Use~\protect\renewkeytheoremstyle\space instead.
61 }
62
63 % Error if thmtools loaded since compilation hangs.
64 % If thmtools loaded after, produce warning.
65 \IfPackageLoadedTF { thmtools }
66 {
67   \msg_fatal:nn { keytheorems } { thmtools-before }
68 }
69 {
70   \hook_gput_code:nnn { package/thmtools/before } { . }
71   {
72     \msg_warning:nn { keytheorems } { thmtools-after }
73   }
74 }
75
76 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
77 %%% Declare Variables %%%
78 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
79
80 \tl_new:N \l__keythms_tmpa_tl
81
82 \bool_new:N \g__keythms_listof_writefile_bool
83 \bool_gset_false:N \g__keythms_listof_writefile_bool
84 \bool_new:N \g__keythms_thmtoolscompat_bool
85 \bool_gset_false:N \g__keythms_thmtoolscompat_bool
86 \bool_new:N \l__keythms_thm_numbered_bool
87 \bool_new:N \l__keythms_thm_unlessunique_bool
88 \bool_new:N \l__keythms_thmuse_listhack_bool
89 \bool_new:N \l__keythms_thmuse_restating_bool
90 \clist_new:N \g__keythms_restatecounters_clist
91 \clist_new:N \l__keythms_thmstyle_savedkeys_clist
92 \iow_new:N \g__keythms_listof_stream
93 \prop_new:N \g__keythms_thmnames_prop
94 \prop_new:N \g__keythms_thmuse_othercounters_prop
95 \prop_new:N \l__keythms_restate_counters_prop
96 \tl_new:N \l__keythms_thm_currentthmstyle_tl
97 \tl_new:N \l__keythms_thm_defaultkeys_tl
98 \tl_new:N \l__keythms_thm_envname_tl
99 \tl_new:N \l__keythms_thmstyle_defaultkeys_tl
100 \tl_new:N \l__keythms_thmstyle_lnotebrace_tl
101 \tl_new:N \l__keythms_thmstyle_rnotebrace_tl
102 \tl_new:N \l__keythms_thmuse_envname_tl
103 \tl_new:N \g__keythms_thmuse_temprestatedata_tl
104

```

```

105 \newcounter{keythms_restate_dummyctr}
106 \cs_gset:Npn \theHkeythms_restate_dummyctr
107   { restate.\arabic{keythms_restate_dummyctr} }
108 \cs_gset:Npn \thekeythms_restate_dummyctr { }
109 \newcounter{keythms_continues_dummyctr}
110 \cs_gset:Npn \theHkeythms_continues_dummyctr
111   { continues.\arabic{keythms_continues_dummyctr} }
112 \cs_gset:Npn \thekeythms_continues_dummyctr { }
113 \newcounter{keythms_unnumbered_dummyctr}
114 \cs_gset:Npn \theHkeythms_unnumbered_dummyctr
115   { unnumbered.\arabic{keythms_unnumbered_dummyctr} }
116 \cs_gset:Npn \thekeythms_unnumbered_dummyctr { }
117
118 \cs_generate_variant:Nn \hook_gput_code:nnn { nnV }
119 \cs_generate_variant:Nn \keys_precompile:nnN { nv, nVc }
120
121 % for detecting AMS classes
122 \prg_new_conditional:Npnn \keythms_if_amsclass: { T, TF }
123   {
124     \IfClassLoadedTF { amsart } { \prg_return_true: }
125     {
126       \IfClassLoadedTF { amsbook } { \prg_return_true: }
127       {
128         \IfClassLoadedTF { amsproc } { \prg_return_true: }
129         { \prg_return_false: }
130       }
131     }
132   }
133
134 %%%%%%%%%%%
135 %% Styles %%
136 %%%%%%%%%%%
137
138 % \_keythms_thmstyle_setbraces:nn { <left brace> } { <right brace> }
139 \cs_new_protected:Npn \_keythms_thmstyle_setbraces:nn #1#2
140   {
141     \tl_set:Nn \l__keythms_thmstyle_lnotebrace_tl { #1 }
142     \tl_set:Nn \l__keythms_thmstyle_rnotebrace_tl { #2 }
143   }
144 \cs_new_protected:Npn \keythms_thmstyle_savethmkey_reqval:n #1
145   {
146     \clist_put_right:No \l__keythms_thmstyle_savedkeys_clist
147     { \l_keys_key_str = { #1 } }
148   }
149 \cs_new_protected:Npn \keythms_thmstyle_savethmkey_optval:n #1
150   {
151     \tl_if_empty:NTF \l_keys_value_tl
152     {
153       \clist_put_right:No \l__keythms_thmstyle_savedkeys_clist
154       { \l_keys_key_str }
155     }
156     {
157       \clist_put_right:No \l__keythms_thmstyle_savedkeys_clist
158       { \l_keys_key_str = { #1 } }
159     }
160   }
161
162 \keys_define:nn { keytheorems/thmstyle }

```

```

163 {
164     spaceabove .tl_set:N = \l__keythms_thmstyle_spaceabove_tl,
165     spacebelow .tl_set:N = \l__keythms_thmstyle_spacebelow_tl,
166     bodyfont .tl_set:N = \l__keythms_thmstyle_bodyfont_tl,
167     headindent .tl_set:N = \l__keythms_thmstyle_headindent_tl,
168     headfont .tl_set:N = \l__keythms_thmstyle_headfont_tl,
169     headpunct .tl_set:N = \l__keythms_thmstyle_headpunct_tl,
170     postheadspace .tl_set:N = \l__keythms_thmstyle_postheadspace_tl,
171     break .meta:n = { postheadspace = \newline }, % add error if postheadspace set
172     break .value_forbidden:n = true,
173     notefont .tl_set:N = \l__keythms_thmstyle_notefont_tl,
174     notebraces .code:n = \exp_after:wN \__keythms_thmstyle_setbraces:nn #1,
175     headstyle .choice:,
176     headstyle / margin .code:n =
177     {
178         \cs_set:Nn \keythms_thmstyle_headcmd:nnn
179         { \makebox[Opt][r]{\NUMBER\ }\NAME\NOTE }
180     },
181     headstyle / swapnumber .code:n =
182     {
183         \cs_set:Nn \keythms_thmstyle_headcmd:nnn { \NUMBER\ \NAME\NOTE }
184     },
185     headstyle / unknown .cs_set:Np = \keythms_thmstyle_headcmd:nnn #1#2#3,
186     headformat .meta:n = { headstyle = #1 },
187     inherit-style .choice:,
188     inherit-style / plain .meta:n = {},
189     inherit-style / definition .meta:n = { bodyfont = \normalfont },
190     inherit-style / remark .meta:n =
191     {
192         headfont = \itshape,
193         bodyfont = \normalfont,
194         spaceabove = 0.5\topsep,
195         spacebelow = 0.5\topsep,
196     },
197     % thm keys that are saved for later
198     numbered .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
199     parent .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
200     numberwithin .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
201     within .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
202     sibling .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
203     numberlike .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
204     sharenumber .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
205     preheadhook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
206     postheadhook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
207     prefoothook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
208     postfoothook .code:n = \keythms_thmstyle_savethmkey_reqval:n { #1 },
209     qed .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
210     tcolorbox .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
211     tcolorbox-no-titlebar .code:n = \keythms_thmstyle_savethmkey_optval:n { #1 },
212 }
213
214 \cs_new_protected:Nn \keythms_thmstyle_thmname:n { \thmname{#1} }
215 \cs_new_protected:Nn \keythms_thmstyle_thmnumber:n { \thmnumber{#1} }
216 \cs_new_protected:Nn \keythms_thmstyle_thmnote:n { \thmnote{#1} }
217
218 %% NOTE: if these are used, user is in charge of spacing with \NAME and \NUMBER
219 %% QUESTION: should these be moved into def of \newkeytheoremstyle?
220 \cs_new:Npn \NAME { \keythms_thmstyle_thmname:n { ##1 } }

```

```

221 \cs_new:Npn \NUMBER
222 {
223   \keythms_thmstyle_thmnumber:n { \textup { ##2 } }
224 }
225 \cs_new:Npn \NOTE
226 {
227   \keythms_thmstyle_thmnote:n
228   { ~ \group_begin: % group so notefont doesn't affect headpunct
229     \exp_not:V \l__keythms_thmstyle_notefont_tl
230     \l__keythms_thmstyle_lnotebrace_tl ##3 \l__keythms_thmstyle_rnotebrace_tl
231     \group_end:
232   }
233 }
234
235 \cs_new:Npn \keythms_thmstyle_headcmd_default:nnn #1#2#3
236 {
237   \keythms_thmstyle_thmname:n { #1 }
238   \keythms_thmstyle_thmnumber:n
239   { \tl_if_empty:nF { #1 } { ~ } \exp_not:N \textup { #2 } }
240   % ^ this \tl_if_empty has no effect...
241   \keythms_thmstyle_thmnote:n
242   { ~ \group_begin: % group so notefont doesn't affect headpunct
243     \exp_not:V \l__keythms_thmstyle_notefont_tl
244     \l__keythms_thmstyle_lnotebrace_tl #3 \l__keythms_thmstyle_rnotebrace_tl
245     \group_end:
246   }
247 }
248
249 %%% <SURELY A BETTER WAY>
250 \cs_new_protected:Npn \__keythms_thmstyle_definekeylist:nn #1#2
251 {
252   \clist_const:cn { c__keythms_thmstyle_defaultkeys_ #1 _clist } { #2 }
253 }
254
255 \cs_new_protected:Npn \__keythms_thmstyle_setdefaultkeys:n #1
256 {
257   \keys_precompile:nvN { keytheorems/thmstyle }
258   { c__keythms_thmstyle_defaultkeys_ #1 _clist }
259   \l__keythms_thmstyle_defaultkeys_tl
260 }
261
262 \__keythms_thmstyle_definekeylist:nn { default }
263 {
264   spaceabove = \topsep,
265   spacebelow = \topsep,
266   bodyfont = \itshape,
267   headindent = 0pt,
268   headfont = \bfseries,
269   headpunct = {.,},
270   postheadspace = 5pt plus 1pt minus 1pt,
271   notefont = \fontseries\mddefault\upshape,
272   notebraces = {({}{)},
273   headstyle = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
274 }
275 \__keythms_thmstyle_definekeylist:nn { amsart }
276 {
277   spaceabove = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
278   spacebelow = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,

```



```

279     bodyfont      = \itshape,
280     headindent    = 0pt,
281     headfont      = \bfseries,
282     headpunct     = {\.},
283     postheadspace = 5pt plus 1pt minus 1pt,
284     notefont      = \fontseries\mddefault\upshape,
285     notebraces    = {({}{)},
286     headstyle     = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
287   }
288 \__keythms_thmstyle_definekeylist:nn { amsproc }
289 {
290     spaceabove    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
291     spacebelow    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
292     bodyfont      = \itshape,
293     headindent    = \parindent,
294     headfont      = \scshape,
295     headpunct     = {\.},
296     postheadspace = 5pt plus 1pt minus 1pt,
297     notefont      = \fontseries\mddefault\upshape,
298     notebraces    = {({}{)},
299     headstyle     = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
300   }
301 \__keythms_thmstyle_definekeylist:nn { amsbook }
302 {
303     spaceabove    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
304     spacebelow    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
305     bodyfont      = \itshape,
306     headindent    = \parindent,
307     headfont      = \scshape,
308     headpunct     = {\.},
309     postheadspace = 5pt plus 1pt minus 1pt,
310     notefont      = \fontseries\mddefault\upshape,
311     notebraces    = {({}{)},
312     headstyle     = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
313   }
314 \__keythms_thmstyle_definekeylist:nn { acmart }
315 {
316     spaceabove    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
317     spacebelow    = .5\baselineskip plus .2\baselineskip minus .2\baselineskip,
318     bodyfont      = \@acmplainbodyfont,
319     headindent    = \@acmplainindent,
320     headfont      = \@acmplainheadfont,
321     headpunct     = {\.},
322     postheadspace = .5em,
323     notefont      = \@acmplainnotefont,
324     notebraces    = {({}{)},
325     headstyle     = \keythms_thmstyle_headcmd_default:nnn{#1}{#2}{#3},
326   }
327
328 \IfClassLoadedTF { amsart }
329 {
330     \IfClassLoadedTF { acmart } % acmart loads amsart
331     {
332         \__keythms_thmstyle_setdefaultkeys:n { acmart }
333     }
334     {
335         \__keythms_thmstyle_setdefaultkeys:n { amsart }
336         \keys_define:nn { keytheorems/thmstyle }

```

```

337         {
338             inherit-style / remark .meta:n =
339             {
340                 headfont = \itshape,
341                 bodyfont = \normalfont,
342             }
343         }
344     }
345 }
346 {
347     \IfClassLoadedTF { amsbook }
348     {
349         \__keythms_thmstyle_setdefaultkeys:n { amsbook }
350         \keys_define:nn { keytheorems/thmstyle }
351         {
352             inherit-style / remark .meta:n =
353             {
354                 bodyfont = \normalfont,
355             },
356         }
357     }
358     {
359         \IfClassLoadedTF { amsproc }
360         {
361             \__keythms_thmstyle_setdefaultkeys:n { amsproc }
362             \keys_define:nn { keytheorems/thmstyle }
363             {
364                 inherit-style / remark .meta:n =
365                 {
366                     bodyfont = \normalfont,
367                 },
368             }
369         }
370         { \__keythms_thmstyle_setdefaultkeys:n { default } }
371     }
372 }
373 %%% </SURELY A BETTER WAY>
374
375 \NewDocumentCommand \newkeytheoremstyle { m m }
376 {
377     \cs_if_free:cTF { th@ #1 }
378     { \keythms_thmstyle_declarestyle:nn { #1 } { #2 } }
379     { \msg_error:nnn { keytheorems } { thmstyle-defined } { #1 } }
380 }
381 \NewDocumentCommand \renewkeytheoremstyle { m m }
382 {
383     \cs_if_free:cTF { th@ #1 }
384     { \msg_error:nnn { keytheorems } { thmstyle-undefined } { #1 } }
385     { \keythms_thmstyle_declarestyle:nn { #1 } { #2 } }
386 }
387 \NewDocumentCommand \providekeytheoremstyle { m m }
388 {
389     \cs_if_free:cT { th@ #1 }
390     { \keythms_thmstyle_declarestyle:nn { #1 } { #2 } }
391 }
392 \NewDocumentCommand \declarekeytheoremstyle { m m }
393 {
394     \keythms_thmstyle_declarestyle:nn { #1 } { #2 }

```

```

395 }
396
397 \@onlypreamble \newkeytheoremstyle
398 \@onlypreamble \renewkeytheoremstyle
399 \@onlypreamble \providekeytheoremstyle
400 \@onlypreamble \declarekeytheoremstyle
401
402 \cs_new_eq:NN \keythms_thmstyle_new:nnnnnnnnn \newtheoremstyle
403 \cs_generate_variant:Nn \keythms_thmstyle_new:nnnnnnnnn { nVVVVVVVe }
404
405 \cs_new_protected:Npn \keythms_thmstyle_declarestyle:nn #1#2
406 {
407   \clist_clear:N \l__keythms_thmstyle_savedkeys_clist
408   \tl_use:N \l__keythms_thmstyle_defaultkeys_tl
409   \keys_set:nn { keytheorems/thmstyle } { #2 }
410   \keythms_thmstyle_new:nVVVVVVVe { #1 }
411   \l__keythms_thmstyle_spaceabove_tl
412   \l__keythms_thmstyle_spacebelow_tl
413   \l__keythms_thmstyle_bodyfont_tl
414   \l__keythms_thmstyle_headindent_tl
415   \l__keythms_thmstyle_headfont_tl
416   \l__keythms_thmstyle_headpunct_tl
417   \l__keythms_thmstyle_postheadspace_tl
418   { \text_expand:n { \keythms_thmstyle_headcmd:nnn{##1}{##2}{##3} } }
419   % Define new inherit-style key
420   \keys_define:nn { keytheorems/thmstyle }
421   { inherit-style / #1 .meta:n = { #2 } }
422   \tl_if_exist:cF { l__keythms_thmstyle_ #1 _savedkeys_tl }
423   { \tl_new:c { l__keythms_thmstyle_ #1 _savedkeys_tl } }
424   \keys_precompile:nVc { keytheorems/thm }
425   \l__keythms_thmstyle_savedkeys_clist
426   { l__keythms_thmstyle_ #1 _savedkeys_tl }
427 }
428
429 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
430 %%% Defining Theorems %%%
431 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
432
433 % FIX: reimplement these without \NewDocumentCommand and \SplitArgument
434
435 % \keythms_thm_setrefnames:n { <envname> } { <refname> or <sing,plural> }
436 \NewDocumentCommand \keythms_thm_setrefnames:nn
437 { m >{\SplitArgument{1}{,}} m }
438 { \__keythms_thm_setrefnames_aux:nnn{#1}#2 }
439 \cs_new_protected:Npn \__keythms_thm_setrefnames_aux:nnn #1#2#3
440 {
441   \cs_set:cpn { #1 autorefname } { #2 }
442   \IfPackageLoadedT { cleveref }
443   {
444     \tl_if_novalue:nTF { #3 }
445     { \crefname{#1}{#2}{\textbf{??~(pl.~#2)}} }
446     { \crefname{#1}{#2}{#3} }
447   }
448 }
449 \cs_generate_variant:Nn \keythms_thm_setrefnames:nn { nV }
450
451 % \keythms_thm_setRefnames:n { <envname> } { <refname> or <sing,plural> }
452 \NewDocumentCommand \keythms_thm_setRefnames:nn

```

```

453 { m >{\SplitArgument{1}{,}} m }
454 { \__keythms_thm_setRefnames_aux:nn{#1}#2 }
455 \cs_new_protected:Npn \__keythms_thm_setRefnames_aux:nn #1#2#3
456 {
457   \cs_set:cpn { #1 Autorefname } { #2 }
458   \IfPackageLoadedT { cleveref }
459   {
460     \tl_if_novalue:nTF { #3 }
461     { \Crefname{#1}{#2}{\textbf{??~(pl.~#2)}} }
462     { \Crefname{#1}{#2}{#3} }
463   }
464 }
465 \cs_generate_variant:Nn \keythms_thm_setRefnames:nn { nV }
466
467 \keys_define:nn { keytheorems/thm }
468 {
469   name .tl_set:N = \l__keythms_thm_name_tl,
470   title .meta:n = { name = #1 },
471   heading .meta:n = { name = #1 },
472   refname .tl_set:N = \l__keythms_thm_refname_tl,
473   Refname .tl_set:N = \l__keythms_thm_Refname_tl,
474   numbered .choice:,
475   numbered / true .code:n = \bool_set_true:N \l__keythms_thm_numbered_bool,
476   numbered / false .code:n = \bool_set_false:N \l__keythms_thm_numbered_bool,
477   numbered / yes .meta:n = { numbered = true },
478   numbered / no .meta:n = { numbered = false },
479   numbered / unless-unique .code:n =
480   {
481     \bool_set_true:N \l__keythms_thm_unlessunique_bool
482   },
483   numbered / unless-unique .meta:n = { numbered = unless-unique },
484   numbered .default:n = true,
485   parent .tl_set:N = \l__keythms_thm_parent_tl,
486   numberwithin .meta:n = { parent = #1 },
487   within .meta:n = { parent = #1 },
488   sibling .tl_set:N = \l__keythms_thm_sibling_tl,
489   numberlike .meta:n = { sibling = #1 },
490   sharenumber .meta:n = { sibling = #1 },
491   style .tl_set:N = \l__keythms_thm_style_tl,
492   style .groups:n = { style-comes-first },
493   preheadhook .tl_set:N = \l__keythms_thm_preheadhook_tl,
494   postheadhook .tl_set:N = \l__keythms_thm_postheadhook_tl,
495   prefoothook .tl_set:N = \l__keythms_thm_prefoothook_tl,
496   postfoothook .tl_set:N = \l__keythms_thm_postfoothook_tl,
497   qed .tl_set:N = \l__keythms_thm_qed_tl,
498   qed .default:n = \c_novalue_tl,
499   % ^ distinguish between 'qed' and 'qed={}'
500   tcolorbox .tl_set:N = \l__keythms_thm_tcbkeys_tl,
501   tcolorbox .default:n = {},
502   tcolorbox-no-titlebar .meta:n =
503   {
504     tcolorbox={
505       notitle,
506       before~upper={
507         \group_begin:
508         \__keythms_thm_tcbxtemphead:
509         \group_end:
510       },

```

```

511         #1
512     }
513 },
514 tcolorbox-no-titlebar .default:n = {},
515 }
516
517 % what below is unnecessary? I really don't understand this code.
518 \cs_new_protected:Npn \__keythms_thm_storedeferredthmhead:n #1
519 {
520     \if@inlabel \indent \par \fi % eject a section head if one is pending
521     \if@nobreak
522         \adjust@parskip@nobreak
523     \else
524         \addpenalty\@beginparpenalty
525         \addvspace\@topsep
526         \addvspace{-\parskip}
527     \fi
528     % \global\@inlabeltrue % MY COMMENT: if this is uncommented then spacing after sections is wrong
529     \everypar\@dth@everypar
530     \cs_set:Npn \__keythms_thm_tcbboxtemphead: { \normalfont #1 }
531     \ignorespaces
532 }
533
534 \keys_precompile:nnN { keytheorems/thm }
535 {
536     name          = \q_no_value,
537     refname       = \q_no_value,
538     Refname       = \q_no_value,
539     numbered      = true,
540     parent        = {},
541     sibling        = {},
542     style         = {},
543     preheadhook   = {},
544     postheadhook  = {},
545     prefoothook   = {},
546     postfoothook  = {},
547     qed           = \q_no_value,
548     tcolorbox     = \q_no_value,
549 }
550 \l__keythms_thm_defaultkeys_tl
551
552 \cs_new_protected:Npn \__keythms_thm_makethmhooks:n #1
553 {
554     \hook_new:n { keytheorems/#1/prehead }
555     \hook_new:n { keytheorems/#1/posthead }
556     \hook_new_reversed:n { keytheorems/#1/prefoot }
557     \hook_new_reversed:n { keytheorems/#1/postfoot }
558     \hook_new:n { keytheorems/#1/restated }
559 }
560
561 % Make generic theorem hooks
562 \__keythms_thm_makethmhooks:n { allthms }
563
564 % \newkeytheorem{<name>}{<keys>}
565 \NewDocumentCommand \newkeytheorem { m O{} }
566 {
567     \clist_map_inline:nn { #1 } % define multiple theorems at once
568     { \keythms_thm_newkeythm:nn { ##1 } { #2 } }

```

```

569 }
570
571 \@onlypreamble \newkeytheorem
572
573 % to prevent error when plain, remark, or definition style used
574 \tl_new:N \l__keythms_thmstyle_plain_savedkeys_tl
575 \tl_new:N \l__keythms_thmstyle_remark_savedkeys_tl
576 \tl_new:N \l__keythms_thmstyle_definition_savedkeys_tl
577
578 % \keythms_thm_newkeythm:nn { <envname> } { <keys> }
579 \cs_new_protected:Npn \keythms_thm_newkeythm:nn #1#2
580 {
581     % Store envname
582     \tl_set:Nn \l__keythms_thm_envname_tl { #1 }
583     % Make unless-unique false by default (can't precompile this)
584     \bool_set_false:N \l__keythms_thm_unlessunique_bool
585     % Set default keys
586     \tl_use:N \l__keythms_thm_defaultkeys_tl
587     % First set style so we can pick up additional thm keys, then overwrite if necessary
588     \keys_set_groups:nnn { keytheorems/thm } { style-comes-first } { #2 }
589     \tl_if_empty:NF \l__keythms_thm_style_tl
590     {
591         % Store theorem style
592         \tl_set:Nn \l__keythms_thm_currentthmstyle_tl { \the\thm@style }
593         % Temporarily set theorem style
594         \__keythms_theoremstyle:n { \l__keythms_thm_style_tl }
595         % If thm keys given in style, call now (possibly overwritten in next step)
596         % but don't error if user uses a style defined with just \newtheoremstyle
597         \tl_if_exist:cT { l__keythms_thmstyle_ \l__keythms_thm_style_tl _savedkeys_tl }
598         { \tl_use:c { l__keythms_thmstyle_ \l__keythms_thm_style_tl _savedkeys_tl } }
599     }
600     % Set env-specific keys
601     \keys_set:nn { keytheorems/thm } { #2 }
602     % Set up env-specific hooks
603     \__keythms_thm_makethmhooks:n { #1 }
604     % Add to env-specific hooks (use label so code given in keys is outermost)
605     % NOTE: faster to check if empty than add empty code to hook
606     \tl_if_empty:NF \l__keythms_thm_preheadhook_tl
607     {
608         \hook_gput_code:nnV { keytheorems/#1/prehead }
609         { keythms_hook_keys } \l__keythms_thm_preheadhook_tl
610     }
611     \tl_if_empty:NF \l__keythms_thm_postheadhook_tl
612     {
613         \hook_gput_code:nnV { keytheorems/#1/posthead }
614         { keythms_hook_keys } \l__keythms_thm_postheadhook_tl
615     }
616     \tl_if_empty:NF \l__keythms_thm_prefoothook_tl
617     {
618         \hook_gput_code:nnV { keytheorems/#1/prefoot }
619         { keythms_hook_keys } \l__keythms_thm_prefoothook_tl
620     }
621     \tl_if_empty:NF \l__keythms_thm_postfoothook_tl
622     {
623         \hook_gput_code:nnV { keytheorems/#1/postfoot }
624         { keythms_hook_keys } \l__keythms_thm_postfoothook_tl
625     }
626     % Set name if none given

```

```

627 \quark_if_no_value:NT \l__keythms_thm_name_tl % use quark so name={} is valid
628 {
629     % use e so \text_titlecase called only once per theorem definition,
630     % not each time the theorem is used
631     \tl_set:Nx \l__keythms_thm_name_tl
632         { \text_titlecase_first:n { #1 } }
633 }
634 % associate formatted name with envname in prop list
635 \prop_gput:NnV \g__keythms_thmnames_prop { #1 } \l__keythms_thm_name_tl
636 % Call correct \newtheorem variant
637 \bool_if:NTF \l__keythms_thm_unlessunique_bool
638 {
639     % [unq] is required since aux is read at begindocument
640     % (technically right before) which is after theorem is defined
641     \RequirePackage[unq]{unique}
642     \tl_if_empty:NTF \l__keythms_thm_parent_tl
643     {
644         \hook_gput_code:nnn { keytheorems/#1/prehead }
645         { keythms_hook_keys } { \setuniqmark { #1 } }
646         \ifuniqu{ #1 }
647         { \bool_set_false:N \l__keythms_thm_numbered_bool }
648         { \bool_set_true:N \l__keythms_thm_numbered_bool }
649         \bool_if:NTF \l__keythms_thm_numbered_bool
650         {
651             \tl_if_empty:NTF \l__keythms_thm_sibling_tl
652             {
653                 \__keythms_thm_new_numbered:nV { #1 } \l__keythms_thm_name_tl
654             }
655             {
656                 \exp_args:NnV \newaliascnt { #1 } \l__keythms_thm_sibling_tl
657                 \__keythms_thm_new_sibling:nVn { #1 }
658                 \l__keythms_thm_name_tl { #1 }
659                 \aliascntresetthe { #1 }
660             }
661         }
662         {
663             \__keythms_thm_new_unnumbered:nV { #1 } \l__keythms_thm_name_tl
664             \hook_gput_code:nnn { keytheorems/#1/prehead } { keythms_hook_keys }
665             {
666                 \keythms_if_restating:F
667                 { \refstepcounter{ keythms_unnumbered_dummyctr } }
668             }
669         }
670     }
671     {
672         \__keythms_thm_new_uuwithparent:nVV { #1 }
673         \l__keythms_thm_name_tl \l__keythms_thm_parent_tl
674     }
675 }
676 {
677     \bool_if:NTF \l__keythms_thm_numbered_bool
678     {
679         \tl_if_empty:NTF \l__keythms_thm_parent_tl
680         {
681             \tl_if_empty:NTF \l__keythms_thm_sibling_tl
682             {
683                 \__keythms_thm_new_numbered:nV { #1 } \l__keythms_thm_name_tl
684             }

```

```

685         {
686             \exp_args:NnV \newaliascnt { #1 } \l__keythms_thm_sibling_tl
687             \__keythms_thm_new_sibling:nVn { #1 }
688             \l__keythms_thm_name_tl { #1 }
689             \aliascntresetthe { #1 }
690         }
691     }
692     {
693         \__keythms_thm_new_parent:nVV { #1 }
694         \l__keythms_thm_name_tl \l__keythms_thm_parent_tl
695     }
696 }
697 {
698     \__keythms_thm_new_unnumbered:nV { #1 } \l__keythms_thm_name_tl
699     \hook_gput_code:nnn { keytheorems/#1/prehead } { keythms_hook_keys }
700     {
701         \keythms_if_restating:F
702         { \refstepcounter{ keythms_unnumbered_dummyctr } }
703     }
704 }
705 }
706 % Store theorem def and redefine it with keys
707 \keythms_keyify_theorem:n { #1 }
708 % define \<env>autorefname and \<env>Autorefname, might be redefined next
709 \exp_args:NnV \cs_set:cpn { #1 autorefname } \l__keythms_thm_name_tl
710 \exp_args:NnV \cs_set:cpn { #1 Autorefname } \l__keythms_thm_name_tl
711 % Set ref names
712 \quark_if_no_value:NF \l__keythms_thm_refname_tl
713 { \keythms_thm_setrefnames:nV { #1 } \l__keythms_thm_refname_tl }
714 \quark_if_no_value:NF \l__keythms_thm_Refname_tl
715 { \keythms_thm_setRefnames:nV { #1 } \l__keythms_thm_Refname_tl }
716 % Set up qed if needed
717 \quark_if_no_value:NF \l__keythms_thm_qed_tl
718 {
719     \exp_args:Nno \__keythms_thm_qedcode:nn { #1 } { \l__keythms_thm_qed_tl }
720 }
721 % Set up tcolorbox if needed
722 \quark_if_no_value:NF \l__keythms_thm_tcbkeys_tl
723 {
724     \exp_args:Nno \__keythms_thm_tcbboxcode:nn { #1 }
725     { \l__keythms_thm_tcbkeys_tl }
726 }
727 % Set default list-of display command
728 \__keythms_listof_show_aux:n { #1 }
729 % Set theorem style back to original state if needed
730 \tl_if_empty:NF \l__keythms_thm_style_tl
731 {
732     \__keythms_theoremstyle:V \l__keythms_thm_currentthmstyle_tl
733 }
734 }
735
736 \cs_new_protected:Npn \__keythms_thm_tcbboxcode:nn #1#2
737 {
738     \RequirePackage{tcolorbox}
739     \hook_gput_code:nnn { keytheorems/#1/prehead }
740     { keythms_tcbbox }
741     {
742         \cs_set_eq:NN \deferred@thm@head \__keythms_thm_storedeferredthmhead:n

```



```

743 \cs_set_eq:NN \Hy@theorem@makelinktarget \use_none:n
744 % ~ don't like playing with hyperref internals... but don't see around
745 % it because hyperref tries to add to para hook which doesn't work
746 % when title set up the way we do it
747 \cs_set_protected:Npn \thm@space@setup { \thm@preskip=0pt \thm@postskip=0pt }
748 % ~ to match tcolorbox defaults; shouldn't interfere with user styles
749 }
750 \hook_gset_rule:nnnn { keytheorems/#1/posthead }
751 { keythms_tcbox } { before } { keythms_hook_keys }
752 \hook_gset_rule:nnnn { keytheorems/#1/prefoot }
753 { keythms_tcbox } { after } { keythms_hook_keys }
754 \hook_gset_rule:nnnn { keytheorems/#1/prefoot }
755 { keythms_tcbox } { after } { keythms_qed }
756 \bool_if:NTF \l__keythms_thm_numbered_bool
757 {
758 \hook_gput_code:nnn { begindocument } { . }
759 {
760 \IfPackageLoadedTF{cleveref}
761 { % hyperref doesn't patch \@thm if cleveref loaded
762 \hook_gput_code:nnn { keytheorems/#1/posthead }
763 { keythms_tcbox }
764 {
765 \begin{tcolorbox}[
766 savedelimiter=#1,
767 title={ \__keythms_thm_tcboxtemphead: },
768 #2]
769 }
770 }
771 {
772 \hook_gput_code:nnn { keytheorems/#1/posthead }
773 { keythms_tcbox }
774 {
775 \begin{tcolorbox}[
776 savedelimiter=#1,
777 title={ \__keythms_thm_tcboxtemphead: },
778 phantom={ \MakeLinkTarget*{\@currentHref} }, % fix hyperlinking
779 #2]
780 }
781 }
782 }
783 }
784 {
785 \hook_gput_code:nnn { keytheorems/#1/posthead }
786 { keythms_tcbox }
787 {
788 \begin{tcolorbox}[
789 savedelimiter=#1,
790 title={ \__keythms_thm_tcboxtemphead: },
791 #2]
792 }
793 }
794 \hook_gput_code:nnn { keytheorems/#1/prefoot }
795 { keythms_tcbox } { \end{tcolorbox} }
796 }
797 \cs_new_protected:Npn \__keythms_thm_qedcode:nn #1#2
798 {
799 \hook_gput_code:nnn { keytheorems/#1/posthead }
800 { keythms_qed }

```

```

801     {
802       \exp_args:No \tl_if_novalue:nF { #2 } { \protected@edef\qedsymbol{#2} }
803       \pushQED{\qed}
804     }
805     \hook_gput_code:nnn { keytheorems/#1/prefoot }
806     { keythms_qed }
807     {
808       \exp_args:No \tl_if_novalue:nF { #2 } { \protected@edef\qedsymbol{#2} }
809       \popQED
810     }
811   }
812
813   \cs_new_eq:NN \__keythms_theoremstyle:n \theoremstyle
814   \cs_generate_variant:Nn \__keythms_theoremstyle:n { V }
815
816   % \newtheorem variants
817   \cs_new_eq:NN \__keythms_thm_new:w \newtheorem
818
819   \cs_new_protected:Npn \__keythms_thm_new_numbered:nn #1#2
820     { \__keythms_thm_new:w { #1 } { #2 } }
821   \cs_generate_variant:Nn \__keythms_thm_new_numbered:nn { nV }
822
823   \cs_new_protected:Npn \__keythms_thm_new_unnumbered:nn #1#2
824     { \__keythms_thm_new:w* { #1 } { #2 } }
825   \cs_generate_variant:Nn \__keythms_thm_new_unnumbered:nn { nV }
826
827   \cs_new_protected:Npn \__keythms_thm_new_parent:nnn #1#2#3
828     { \__keythms_thm_new:w { #1 } { #2 } [ #3 ] }
829   \cs_generate_variant:Nn \__keythms_thm_new_parent:nnn { nVV }
830
831   \cs_new_protected:Npn \__keythms_thm_new_sibling:nnn #1#2#3
832     { \__keythms_thm_new:w { #1 } [ #3 ] { #2 } }
833   \cs_generate_variant:Nn \__keythms_thm_new_sibling:nnn { nV }
834
835   \cs_new_protected:Npn \__keythms_thm_new_uuwithparent:nnn #1#2#3
836     {
837       \cs_undefine:c { keythms_orig_nonumber_#1 } % for renew, declare
838       \__keythms_thm_new_unnumbered:nn { keythms_orig_nonumber_#1 } { #2 }
839       \__keythms_thm_new_parent:nnn { #1 } { #2 } { #3 }
840       \DeclareEnvironmentCopy { keythms_orig_withparent_#1 } { #1 }
841       \renewenvironment { #1 } % opt arg is implicit
842       {
843         \setuniqmark{ #1. \use:c {the #3} }
844         \ifuniq{ #1. \use:c {the #3} }
845         {
846           \keythms_if_restating:F
847           { \refstepcounter{ keythms_unnumbered_dummyctr } }
848           \begin{keythms_orig_nonumber_#1}
849         }
850         {
851           \begin{keythms_orig_withparent_#1}
852         }
853       }
854     }
855     \ifuniq{ #1. \use:c {the #3} }
856     { \end{keythms_orig_nonumber_#1} }
857     { \end{keythms_orig_withparent_#1} }
858   }

```

```

859 }
860 \cs_generate_variant:Nn \__keythms_thm_new_uuwithparent:nnn { nVV }
861
862 % for getting notes with continues*, use nameref if available, otherwise ltproperties
863 \hook_gput_code:nnn { begindocument } { . }
864 {
865   \IfPackageLoadedTF { nameref }
866   {
867     \cs_new:Npn \__keythms_thmuse_recordnote: { } % nameref takes care of this
868     \cs_new:Npn \__keythms_getrecordednote:n #1
869     {
870       \getrefbykeydefault{ #1 }{ name }{ }
871     }
872   }
873   { % needs https://github.com/latex3/latex2e/issues/1200 fixed
874     \property_new:nnnn { keytheorems/recordednote } { now } { }
875     { \l__keythms_thmuse_note_tl }
876     \cs_new:Npn \__keythms_getrecordednote:n #1
877     {
878       \property_ref:nn { keythms_recordednote_#1 }
879       { keytheorems/recordednote }
880     }
881     \cs_new:Npn \__keythms_thmuse_recordnote:
882     {
883       \tl_if_empty:NF \l__keythms_thmuse_note_tl
884       {
885         \RecordProperties
886         { keythms_recordednote_\l__keythms_thmuse_label_tl }
887         { keytheorems/recordednote }
888       }
889     }
890   }
891 }
892
893 \keys_define:nn { keytheorems/thmuse }
894 {
895   label      .tl_set:N = \l__keythms_thmuse_label_tl,
896   note       .tl_set:N = \l__keythms_thmuse_note_tl,
897   name       .meta:n   = { note = #1 },
898   % ^ for compatibility. "name" is ambiguous and doesn't match amsthm language
899   short-note .code:n   = {}, % these do nothing at point of use
900   short-name .code:n   = {}, % ^ worthwhile compatibility?
901   continues  .tl_set:N = \l__keythms_thmuse_contlabel_tl,
902   continues* .code:n   =
903   {
904     \keys_set:nn { keytheorems/thmuse } { continues = #1 }
905     \protected@edef \l__keythms_tmpa_tl { \__keythms_getrecordednote:n{#1} }
906     \tl_if_empty:NF \l__keythms_tmpa_tl
907     {
908       \keys_set:nn { keytheorems/thmuse }
909       { note = \l__keythms_tmpa_tl }
910     }
911   },
912   store      .tl_set:N = \l__keythms_thmuse_store_tl,
913   %store     .default:n = \q_no_value, % ={name} causes issues
914   restate    .meta:n   = { store = #1 },
915   % ^ thmtools compatibility
916   listhack   .choice:, % need equals sign

```

```

917 listhack / true .code:n = \bool_set_true:N \l__keythms_thmuse_listhack_bool,
918 listhack / false .code:n = \bool_set_false:N \l__keythms_thmuse_listhack_bool,
919 listhack .initial:n = false,
920 seq .code:n = {},
921 }
922
923 \cs_new_protected:Npn \keythms_keyify_theorem:n #1
924 { % #1 = theorem name
925   \DeclareEnvironmentCopy { keythms_orig_#1 } { #1 }
926   \DeclareDocumentEnvironment { keythms_grab_#1 } { m O{} +b }
927   { % ##1 = keys, ##2 = note, ##3 = theorem body
928     \__keythms_thm_prehead_code:n { #1 }
929     \begin{keythms_orig_#1}[{##2}]
930     \clist_map_inline:Nn \g__keythms_restatecounters_clist
931       {
932         \prop_gput:Nne \g__keythms_thmuse_othercounters_prop { #####1 }
933         { \the\value{#####1} }
934       }
935     \__keythms_thm_posthead_code:n { #1 }
936     % below needs to come after posthead so that correct \@currentHref
937     % is stored for tcolorbox theorems
938     \__keythms_thm_addcontentsdata:nnnn { #1 }
939     { \prop_to_keyval:N \g__keythms_thmuse_othercounters_prop }
940     { ##1 } { ##3 }
941     \__keythms_thm_tempstorerebasedata:nnn { #1 } { ##1 } { ##3 }
942     ##3
943     \__keythms_thm_prefoot_code:n { #1 }
944     \end{keythms_orig_#1}
945     \__keythms_thm_postfoot_code:n { #1 }
946   }
947   {}
948   % NOTE: have to do a lot of shenanigans to make sure the begin/end of grabbed
949   % theorem env captures only the body and no package code.
950   % This is the price of on-the-fly redefining the env to grab body
951   \RenewDocumentEnvironment { #1 } { = {note} O{} }
952   {
953     \keys_set:nn { keytheorems/thmuse } { ##1 }
954     \tl_if_empty:NF \l__keythms_thmuse_store_tl
955     {
956       \bool_gset_true:N \g__keythms_listof_writefile_bool
957       \cs_set_eq:NN \__keythms_withhooks_begin:nn \__keythms_grab_begin:nn
958       \cs_set_eq:NN \__keythms_withhooks_begin:nnn \__keythms_grab_begin:nnn
959       \cs_set_eq:NN \__keythms_withhooks_begin:nnV \__keythms_grab_begin:nnV
960       \cs_set_eq:NN \__keythms_withhooks_end:n \__keythms_grab_end:n
961     }
962     \__keythms_thm_prehead_continues_code:n { #1 }
963     \tl_if_empty:NTF \l__keythms_thmuse_note_tl
964     { \__keythms_withhooks_begin:nn { #1 } { ##1 } }
965     {
966       \__keythms_withhooks_begin:nnV { #1 } { ##1 }
967       \l__keythms_thmuse_note_tl
968     }
969   }
970   {
971     \__keythms_withhooks_end:n { #1 }
972     \tl_if_empty:NF \l__keythms_thmuse_store_tl
973     {
974       \cs_if_exist:cF

```

```

975         { __keythms_getthm_ \l__keythms_thmuse_store_tl _theorem }
976     {
977         \cs_new:cpe
978         { __keythms_getthm_ \l__keythms_thmuse_store_tl _theorem }
979         {
980             \exp_not:N \__keythms_getthm_theorem:nnnnn
981             \exp_not:o { \g__keythms_thmuse_temprestatedata_tl }
982         }
983         \cs_new:cpe
984         { __keythms_getthm_ \l__keythms_thmuse_store_tl _body }
985         {
986             \exp_not:N \__keythms_getthm_body:nn
987             \exp_args:No \exp_not:o
988             {
989                 \exp_after:wN \__keythms_use_iii_v_braced:nnnnn
990                 \g__keythms_thmuse_temprestatedata_tl
991             }
992         }
993     }
994 }
995 }
996 }
997 \cs_new:Npn \__keythms_use_iii_v_braced:nnnnn #1#2#3#4#5 { {#3}{#5} }
998
999 \cs_new_protected:Npn \__keythms_withhooks_begin:nn #1#2
1000 { % #1 = theorem name, #2 = keys
1001     \__keythms_thm_prehead_code:n { #1 }
1002     \begin{keythms_orig_#1}
1003     \__keythms_thm_posthead_code:n { #1 }
1004     \__keythms_thm_addcontentsdata:nnnn { #1 } { } { #2 } { }
1005     \ignorespaces % I hope this is alright
1006 }
1007 \cs_new_protected:Npn \__keythms_withhooks_begin:nnn #1#2#3
1008 { % #1 = theorem name, #2 = keys, #3 = note
1009     \__keythms_thm_prehead_code:n { #1 }
1010     \begin{keythms_orig_#1}[{#3}]
1011     \__keythms_thm_posthead_code:n { #1 }
1012     \__keythms_thm_addcontentsdata:nnnn { #1 } { } { #2 } { }
1013     \ignorespaces % I hope this is alright
1014 }
1015 \cs_generate_variant:Nn \__keythms_withhooks_begin:nnn { nnV }
1016 \cs_new_protected:Npn \__keythms_withhooks_end:n #1
1017 {
1018     \__keythms_thm_prefoot_code:n { #1 }
1019     \end{keythms_orig_#1}
1020     \__keythms_thm_postfoot_code:n { #1 }
1021 }
1022 \cs_new_protected:Npn \__keythms_grab_begin:nn #1#2
1023 { % #1 = theorem name, #2 = keys
1024     \begin{keythms_grab_#1}{#2}
1025 }
1026 \cs_new_protected:Npn \__keythms_grab_begin:nnn #1#2#3
1027 { % #1 = theorem name, #2 = keys, #3 = note
1028     \begin{keythms_grab_#1}{#2}[{#3}]
1029 }
1030 \cs_generate_variant:Nn \__keythms_grab_begin:nnn { nnV }
1031 \cs_new_protected:Npn \__keythms_grab_end:n #1 { \end{keythms_grab_#1} }
1032

```

```

1033 \cs_new_protected:Npn \__keythms_orig_begin:n #1 { \begin{keythms_orig_#1} }
1034 \cs_new_protected:Npn \__keythms_orig_begin:nn #1#2
1035   { \begin{keythms_orig_#1}[{#2}] }
1036 \cs_generate_variant:Nn \__keythms_orig_begin:nn { nV }
1037 \cs_new_protected:Npn \__keythms_orig_end:n #1 { \end{keythms_orig_#1} }
1038
1039 \cs_new_protected:Npn \__keythms_thm_prehead_code:n #1
1040   { % #1 = theorem name
1041     \tl_set:Nn \l__keythms_thmuse_envname_tl { #1 }
1042     \hook_use:n { keytheorems/#1/prehead }
1043     \hook_use:n { keytheorems/allthms/prehead }
1044   }
1045 %% this below has to be separate from prehead_code above since we need to add
1046 %% continues-code to note before retrieving it in \__keythms_withhooks_begin:nnV
1047 \cs_new_protected:Npn \__keythms_thm_prehead_continues_code:n #1
1048   { % #1 = theorem name
1049     \tl_if_empty:NF \l__keythms_thmuse_contlabel_tl
1050     {
1051       \tl_if_empty:NF \l__keythms_thmuse_note_tl
1052       { \tl_put_right:Nn \l__keythms_thmuse_note_tl { , ~ } }
1053       \tl_put_right:Ne \l__keythms_thmuse_note_tl
1054       { \__keythms_thmuse_continues:V \l__keythms_thmuse_contlabel_tl }
1055       \cs_set:cpn { the #1 }
1056       {
1057         \getrefnumber { \l__keythms_thmuse_contlabel_tl }
1058       }
1059       \cs_set_eq:cN { c@ #1 } \c@keythms_continues_dummyctr
1060       \cs_set_eq:cN { theH #1 } \theHkeythms_continues_dummyctr
1061       %\cs_set_eq:NN \setuniquemark \use_none:n % not the right fix
1062     }
1063   }
1064 \cs_new_protected:Npn \__keythms_thm_posthead_code:n #1
1065   { % #1 = theorem name
1066     \hook_use:n { keytheorems/#1/posthead }
1067     \hook_use:n { keytheorems/allthms/posthead }
1068     \tl_if_empty:NF \l__keythms_thmuse_label_tl
1069     {
1070       \label{ \l__keythms_thmuse_label_tl }
1071       \__keythms_thmuse_recordnote:
1072     }
1073     \bool_if:NT \l__keythms_thmuse_listhack_bool
1074     { % straight from thm-amsthm.sty
1075       \leavevmode
1076       \vspace{-\baselineskip}%
1077       \par
1078       \everypar{\setbox\z@\lastbox\everypar{}}%
1079     }
1080   }
1081 \cs_new_protected:Npn \__keythms_thm_prefoot_code:n #1
1082   { % #1 = theorem name
1083     \hook_use:n { keytheorems/allthms/prefoot }
1084     \hook_use:n { keytheorems/#1/prefoot }
1085   }
1086 \cs_new_protected:Npn \__keythms_thm_postfoot_code:n #1
1087   { % #1 = theorem name
1088     \hook_use:n { keytheorems/allthms/postfoot }
1089     \hook_use:n { keytheorems/#1/postfoot }
1090   }

```

```

1091 \cs_new_protected:Npn \__keythms_thm_addcontentsdata:nnnn #1#2#3#4
1092 { % #1 = theorem name, #2 = stored counters, #3 = keys, #4 = body
1093   \keythms_listof_chaptervspacehack:
1094   \iow_shipout:Ne \@auxout
1095   {
1096     \exp_not:N \@writefile { thlist }
1097     {
1098       \KeyThmsSavedTheorem{ #1 }
1099       { \@currentlabel }
1100       { \@currentHref }
1101       { \thepage }
1102       { #2 }
1103       { \exp_not:n { #3 } } % do we want any expansion here, perhaps
1104       { \exp_not:n { #4 } } % with \text_expand:n ?
1105     }
1106   }
1107 }
1108 \cs_new_protected:Npn \__keythms_thm_tempstorerebasedata:nnn #1#2#3
1109 { % #1 = theorem name, #2 = keys, #3 = body
1110   \tl_gset:Ne \g__keythms_thmuse_temprestatedata_tl % needs to be global to get out of env
1111   {
1112     { #1 }
1113     { \@currentlabel }
1114     { \prop_to_keyval:N \g__keythms_thmuse_othercounters_prop }
1115     { \exp_not:n { #2 } } % do we want any expansion here, perhaps
1116     { \exp_not:n { #3 } } % with \text_expand:n ?
1117   }
1118 }
1119
1120 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1121 %%% Retrieving Theorem Data %%%
1122 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1123
1124 \cs_new_protected:Npn \KeyThmsSavedTheorem #1#2#3#4#5#6#7 % 7th arg is body
1125 { \use:c { __keythms_thmitem_#1:nnnnnn } {#2}{#3}{#4}{#5}{#6}{#7} }
1126
1127 \keys_define:nn { keytheorems/storeatbegin }
1128 {
1129   store .tl_set:N = \l__keythms_storeatbegin_store_tl,
1130   restate .meta:n = { store=#1 },
1131   unknown .code:n = { } % do nothing with unknown keys
1132 }
1133
1134 \cs_new_protected:Npn \KeyThmsContentsLine #1 { #1 }
1135 \NewDocumentCommand \addtheoremcontentsline { m m }
1136 {
1137   \addtocontents { thlist }
1138   {
1139     \KeyThmsContentsLine
1140     { % copied from def of \addcontentsline
1141       \protect\contentsline{#1}{#2}{\thepage}{ }
1142       \protected@file@percent
1143     }
1144   }
1145 }
1146 \NewDocumentCommand \addtotheoremcontents { m }
1147 {
1148   \addtocontents { thlist }

```

```

1149     {
1150     \KeyThmsContentsLine { #1 }
1151     }
1152 }
1153
1154 \hook_gput_code:nnn { begindocument } { . }
1155 {
1156   \group_begin:
1157   \cs_set_eq:NN \KeyThmsContentsLine \use_none:n
1158   \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1159   \cs_set_protected:Npn \KeyThmsSavedTheorem #1#2#3#4#5#6#7
1160   {
1161     \group_begin:
1162     \keys_set:nn { keytheorems/storeatbegin } { #6 }
1163     \tl_if_empty:NF \l__keythms_storeatbegin_store_tl
1164     {
1165       \cs_new_protected:cpn
1166       { __keythms_getthm_ \l__keythms_storeatbegin_store_tl _theorem }
1167       {
1168         \__keythms_getthm_theorem:nnnnn
1169         {#1}{#2}{#5}{#6}{#7}
1170       }
1171       \cs_new_protected:cpn
1172       { __keythms_getthm_ \l__keythms_storeatbegin_store_tl _body }
1173       {
1174         \__keythms_getthm_body:nn {#5}{#7}
1175       }
1176     }
1177     \group_end:
1178   }
1179   \file_if_exist_input:n { \c_sys_jobname_str.thlist }
1180   \group_end:
1181 }
1182
1183 \prg_new_conditional:Npnn \keythms_if_restating: { T, F, TF }
1184 {
1185   \bool_if:NTF \l__keythms_thmuse_restating_bool
1186   { \prg_return_true: }
1187   { \prg_return_false: }
1188 }
1189 \NewDocumentCommand \IfRestatingTF { } { \keythms_if_restating:TF }
1190
1191 \cs_new_protected:Npn \__keythms_getthm_theorem:nnnnn #1#2#3#4#5
1192 { % #1 = name, #2 = number, #3 = restate counters, #4 = keys, #5 = theorem body
1193   \group_begin:
1194   \bool_set_true:N \l__keythms_thmuse_restating_bool
1195   \prop_set_from_keyval:Nn \l__keythms_restate_counters_prop { #3 }
1196   \prop_map_inline:Nn \l__keythms_restate_counters_prop
1197   {
1198     \tl_set:ce { l_keythms_restate_current_##1_tl } { \the\value{##1} }
1199     \setcounter { ##1 } { ##2 }
1200     % ^ FIX: what if eq's numbered by section, theorem, etc.? The
1201     %       thmtools code is opaque.... Or maybe should be up to the
1202     %       user to say "restate-counters={section,chapter,...}".
1203     \cs_set:cpn { theH ##1 } { \use:c { the ##1 } . \theHkeythms_restate_dummyctr }
1204   }
1205   \tl_if_empty:nTF { #2 }
1206   { \refstepcounter{keythms_restate_dummyctr} } % for unnumbered theorems

```



```

1207 {
1208   \cs_set:cpn { the #1 } { #2 }
1209   \cs_set_eq:cn { c@ #1 } \c@keythms_restate_dummyctr
1210   \cs_set_eq:cn { theH #1 } \theHkeythms_restate_dummyctr
1211   % ^ why are the last two line here? We shouldn't be referencing
1212   %   restated theorems. Think it's a remnant of thmtools
1213   % WRONG: needed to make numbering correct after restated theorem.
1214   % not sure about theH. <- this is needed to prevent duplicate anchors
1215 }
1216 \renewcommand\label[2][]{ } % disable \label (opt arg in case cleveref loaded)
1217 \cs_set_eq:NN \ltx@label \use_none:n % disable \ltx@label
1218 \cs_set_eq:NN \property_record:nn \use_none:nn % disable \RecordProperties
1219 \cs_set_eq:NN \setuniqmark \use_none:n % work with numbered=unless-unique
1220 % QUESTION: also disable \hyper@@anchor? \MakeLinkTarget?
1221 \keys_set:nn { keytheorems/thmuse } { #4 }
1222 \hook_use:n { keytheorems/#1/restated }
1223 \hook_use:n { keytheorems/allthms/restated }
1224 \__keythms_thm_prehead_continues_code:n { #1 }
1225 \__keythms_thm_prehead_code:n { #1 }
1226 \tl_if_empty:NTF \l__keythms_thmuse_note_tl
1227   { \__keythms_orig_begin:n { #1 } }
1228   { \__keythms_orig_begin:nV { #1 } \l__keythms_thmuse_note_tl }
1229 \__keythms_thm_posthead_code:n { #1 }
1230 #5
1231 \__keythms_thm_prefoot_code:n { #1 }
1232 \__keythms_orig_end:n { #1 }
1233 \__keythms_thm_postfoot_code:n { #1 }
1234 \prop_map_inline:Nn \l__keythms_restate_counters_prop
1235 {
1236   \exp_args:Nnc \setcounter { ##1 }
1237     { l_keythms_restate_current_##1_tl }
1238 }
1239 \group_end:
1240 }
1241
1242 \cs_new_protected:Npn \__keythms_getthm_body:nn #1#2
1243 { % #1 = restate counters, #2 = theorem body
1244   \group_begin:
1245   \bool_set_true:N \l__keythms_thmuse_restating_bool
1246   \prop_set_from_keyval:Nn \l__keythms_restate_counters_prop { #1 }
1247   \prop_map_inline:Nn \l__keythms_restate_counters_prop
1248   {
1249     \tl_set:ce { l_keythms_restate_current_##1_tl } { \the\value{##1} }
1250     \setcounter { ##1 } { ##2 }
1251     % ^ FIX: what if eq's numbered by section, theorem, etc.? The
1252     %       thmtools code is opaque.... Or maybe should be up to the
1253     %       user to say "restate-counters={section,chapter,...}".
1254     \cs_set:cpn { theH ##1 } { \use:c { the ##1 } . \theHkeythms_restate_dummyctr }
1255   }
1256   \refstepcounter{keythms_restate_dummyctr}
1257   \renewcommand\label[2][]{ } % disable \label (opt arg in case cleveref loaded)
1258   \cs_set_eq:NN \ltx@label \use_none:n % disable \ltx@label
1259   \cs_set_eq:NN \property_record:nn \use_none:nn % disable \RecordProperties
1260   \hook_use:n { keytheorems/#1/restated }
1261   \hook_use:n { keytheorems/allthms/restated }
1262   #2
1263   \prop_map_inline:Nn \l__keythms_restate_counters_prop
1264   {

```

```

1265     \exp_args:Nnc \setcounter { ##1 }
1266     { l_keythms_restate_current_##1_tl }
1267   }
1268   \group_end:
1269 }
1270
1271 % \getkeytheorem[<property>]{<tag>}
1272 \NewDocumentCommand \getkeytheorem { o m }
1273 {
1274   \cs_if_exist:cTF { __keythms_getthm_#2_theorem }
1275   {
1276     \IfNoValueTF { #1 }
1277     { \use:c { __keythms_getthm_#2_theorem } }
1278     { \use:c { __keythms_getthm_#2_#1 } }
1279   }
1280   {
1281     \textbf{??}
1282     \msg_warning:nnn { keytheorems } { no-stored-theorem } { #2 }
1283   }
1284 }
1285
1286 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1287 %% Theorem Hooks %%
1288 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1289
1290 %% \addtotheoremhook[<envname>]{<hook>}{<code>}
1291 \NewDocumentCommand \addtotheoremhook { o m +m }
1292 {
1293   \__hook_if_declared:nTF { keytheorems/allthms/#2 }
1294   {
1295     \IfNoValueTF { #1 }
1296     { \hook_gput_code:nnn { keytheorems/allthms/#2 } { . } { #3 } }
1297     { \hook_gput_code:nnn { keytheorems/#1/#2 } { . } { #3 } }
1298   }
1299   {
1300     \msg_error:nnn { keytheorems } { undefined-thm-hook } { #2 }
1301   }
1302 }
1303
1304 % NOTE: I think it's OK we use the internal \__hook_if_declared:nTF above
1305 %       since we don't need to worry about the user creating new theorem hooks
1306 %       so, as we're only checking the existence of hooks created by us, it's OK.
1307
1308 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1309 %% List of Theorems %%
1310 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1311
1312 \keys_define:nn { keytheorems/listof }
1313 {
1314   numwidth .dim_set:N = \l_keythms_listof_numwidth_dim,
1315   numwidth .initial:n = 2.3em,
1316   ignore .code:n =
1317   {
1318     \hook_gput_code:nnn { begindocument/before } { keytheorems }
1319     { \keythms_listof_ignore:n { #1 } }
1320   },
1321   show .code:n =
1322   {

```

```

1323     \hook_gput_code:nnn { begindocument/before } { keytheorems }
1324     { \keythms_listof_show:n { #1 } }
1325 },
1326 onlynamed .code:n =
1327 {
1328     \hook_gput_code:nnn { begindocument/before } { keytheorems }
1329     { \keythms_listof_onlynamed:n { #1 } }
1330 },
1331 onlynamed .default:n = \q_no_value,
1332 onlynumbered .code:n =
1333 {
1334     \hook_gput_code:nnn { begindocument/before } { keytheorems }
1335     { \keythms_listof_onlynumbered:n { #1 } }
1336 },
1337 onlynumbered .default:n = \q_no_value,
1338 ignoreall .code:n =
1339 {
1340     \hook_gput_code:nnn { begindocument/before } { keytheorems } % in case called before theorem
1341     {
1342         \prop_map_inline:Nn \g__keythms_thmnames_prop
1343         { \__keythms_listof_ignore_aux:n { ##1 } }
1344     }
1345 },
1346 showall .code:n =
1347 {
1348     \hook_gput_code:nnn { begindocument/before } { keytheorems } % in case called before theorem
1349     {
1350         \prop_map_inline:Nn \g__keythms_thmnames_prop
1351         { \__keythms_listof_show_aux:n { ##1 } }
1352     }
1353 },
1354 title .tl_set:N = \l__keythms_listof_title_tl,
1355 title .initial:n = \GetTranslation{keythms_listof_title},
1356 swapnumber .bool_set:N = \l__keythms_listof_swapnumber_bool,
1357 swapnumber .initial:n = false,
1358 title-code .cs_set:Np = \__keythms_listof_titlecmd:n #1,
1359 no-title .bool_set:N = \l__keythms_listof_notitle_bool,
1360 no-title .initial:n = false,
1361 print-body .code:n =
1362 {
1363     \cs_set_protected:Nn \keythms_listof_listcmd:nnnnnnn
1364     {
1365         \tl_if_empty:nF { ##7 }
1366         {
1367             \__keythms_getthm_theorem:nnnnn
1368             {##1}{##2}{##5}{##6}{##7}
1369         }
1370     }
1371     \cs_set_eq:NN \KeyThmsContentsLine \use_none:n
1372     % ~ I assume we want this?
1373     \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1374 },
1375 note-code .cs_set:Np = \__keythms_listof_notecmd:n #1,
1376 note-code .initial:n = { ~ (#1) },
1377 no-continues .bool_set:N = \l__keythms_listof_nocont_bool,
1378 no-continues .initial:n = false,
1379 no-chapter-skip .bool_set:N = \l__keythms_listof_nochapskip_bool,
1380 no-chapter-skip .initial:n = false,

```

```

1381     chapter-skip-length .dim_set:N = \keythms@listof@chaptervspace@dim,
1382     chapter-skip-length .initial:n = 10pt,
1383 }
1384
1385 \hook_gput_code:nnn { begindocument } { . } % redefine these keys at begindocument
1386 {
1387     \keys_define:nn { keytheorems/listof }
1388     {
1389         ignore .code:n = \keythms_listof_ignore:n { #1 },
1390         show .code:n = \keythms_listof_show:n { #1 },
1391         onlynamed .code:n = \keythms_listof_onlynamed:n { #1 },
1392         onlynamed .default:n = \q_no_value,
1393         onlynumbered .code:n = \keythms_listof_onlynumbered:n { #1 },
1394         onlynumbered .default:n = \q_no_value,
1395         ignoreall .code:n =
1396         {
1397             \prop_map_inline:Nn \g__keythms_thmnames_prop
1398             { \__keythms_listof_ignore_aux:n { ##1 } }
1399         },
1400         showall .code:n =
1401         {
1402             \prop_map_inline:Nn \g__keythms_thmnames_prop
1403             { \__keythms_listof_show_aux:n { ##1 } }
1404         },
1405         seq .code:n = \keythms_listof_showseq:n { #1 },
1406     }
1407 }
1408
1409 \NewDocumentCommand \keytheoremset { m }
1410 {
1411     \keys_set:nn { keytheorems/listof } { #1 }
1412 }
1413
1414 \cs_new_protected:Npn \keythms_listof_ignore:n #1
1415 {
1416     \clist_map_inline:nn { #1 } { \__keythms_listof_ignore_aux:n { ##1 } }
1417 }
1418 \cs_new_protected:Npn \__keythms_listof_ignore_aux:n #1
1419 {
1420     \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1421     { }
1422 }
1423
1424 \cs_new_protected:Npn \keythms_listof_show:n #1
1425 {
1426     \clist_map_inline:nn { #1 } { \__keythms_listof_show_aux:n { ##1 } }
1427 }
1428 \cs_new_protected:Npn \__keythms_listof_show_aux:n #1
1429 {
1430     \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1431     {
1432         \__keythms_listof_listcmd_setup:nn { ##5 }
1433         {
1434             \keythms_listof_listcmd:nnnnnn
1435             {#1}{##1}{##2}{##3}{##4}{##5}{##6}
1436         }
1437     }
1438 }

```

```

1439
1440 \cs_new_protected:Npn \keythms_listof_onlynamed:n #1
1441 {
1442     \quark_if_no_value:nTF { #1 }
1443     {
1444         \prop_map_inline:Nn \g__keythms_thmnames_prop
1445         { \__keythms_listof_onlynamed_aux:n { ##1 } }
1446     }
1447     {
1448         \clist_map_inline:nn { #1 }
1449         { \__keythms_listof_onlynamed_aux:n { ##1 } }
1450     }
1451 }
1452 \cs_new_protected:Npn \__keythms_listof_onlynamed_aux:n #1
1453 {
1454     \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1455     {
1456         \__keythms_listof_listcmd_setup:nn { ##5 }
1457         {
1458             \tl_if_empty:NF \l__keythms_listofheading_note_tl
1459             {
1460                 \keythms_listof_listcmd:nnnnnnn
1461                 {#1}{##1}{##2}{##3}{##4}{##5}{##6}
1462             }
1463         }
1464     }
1465 }
1466
1467 \cs_new_protected:Npn \keythms_listof_onlynumbered:n #1
1468 {
1469     \quark_if_no_value:nTF { #1 }
1470     {
1471         \prop_map_inline:Nn \g__keythms_thmnames_prop
1472         { \__keythms_listof_onlynumbered_aux:n { ##1 } }
1473     }
1474     {
1475         \clist_map_inline:nn { #1 }
1476         { \__keythms_listof_onlynumbered_aux:n { ##1 } }
1477     }
1478 }
1479 \cs_new_protected:Npn \__keythms_listof_onlynumbered_aux:n #1
1480 {
1481     \cs_set_protected:cpn { __keythms_thmitem_#1:nnnnnn } ##1##2##3##4##5##6
1482     {
1483         \__keythms_listof_listcmd_setup:nn { ##5 }
1484         {
1485             \tl_if_empty:NF { ##1 }
1486             {
1487                 \keythms_listof_listcmd:nnnnnnn
1488                 {#1}{##1}{##2}{##3}{##4}{##5}{##6}
1489             }
1490         }
1491     }
1492 }
1493
1494 \cs_new_protected:Npn \keythms_listof_showseq:n #1
1495 {
1496     \prop_map_inline:Nn \g__keythms_thmnames_prop

```

```

1497     { \_keythms_listof_showseq_aux:nn { #1 } { ##1 } }
1498   }
1499 \cs_new_protected:Npn \_keythms_listof_showseq_aux:nn #1#2
1500   { % #1 = seq name, #2 = theorem name
1501     \cs_set_protected:cpn { \_keythms_thmitem_#2:nnnnnn } ##1##2##3##4##5##6
1502     {
1503       \_keythms_listof_listcmd_setup:nn { ##5 }
1504       {
1505         \tl_if_eq:NnT \l__keythms_listofheading_seq_tl { #1 }
1506         {
1507           \keythms_listof_listcmd:nnnnnnn
1508             {#2}{##1}{##2}{##3}{##4}{##5}{##6}
1509         }
1510       }
1511     }
1512   }
1513
1514 % Seems unnecessary to repeat all this for reading the keyvals from seq.
1515 % In thmtools they just hook the "thmitem" definition into the theorem declaration.
1516 %% NOTE ON ABOVE: this gives more flexibility to define different kinds of lists.
1517 %% Seeacro.sty for template idea.
1518 \keys_define:nn { keytheorems/listofheading }
1519   {
1520     note      .tl_set:N = \l__keythms_listofheading_note_tl,
1521     name      .meta:n   = { note = #1 },
1522     short-note .tl_set:N = \l__keythms_listofheading_shortnote_tl,
1523     short-name .meta:n   = { short-note = #1 },
1524     continues .tl_set:N = \l__keythms_listofheading_contlabel_tl,
1525     continues* .code:n   =
1526       {
1527         \keys_set:nn { keytheorems/listofheading } { continues = #1 }
1528         \protected@edef \l__keythms_tmpa_tl { \_keythms_getrecordednote:n{#1} }
1529         \tl_if_empty:NF \l__keythms_tmpa_tl
1530         {
1531           \keys_set:nn { keytheorems/listofheading }
1532             { note = \l__keythms_tmpa_tl }
1533         }
1534       },
1535     seq      .tl_set:N = \l__keythms_listofheading_seq_tl,
1536     unknown .code:n = { } % do nothing with unknown keys
1537     % ~ this is OK because we have total control over possible keys; if invalid
1538     % key is given to theorem then an error will be raised there
1539   }
1540
1541 \cs_new:Npn \_keythms_listof_printheadng:
1542   {
1543     \tl_if_empty:NTF \l__keythms_listofheading_shortnote_tl
1544     {
1545       \tl_if_empty:NF \l__keythms_listofheading_note_tl
1546       { \_keythms_listof_notecmd:n { \l__keythms_listofheading_note_tl } }
1547     }
1548     {
1549       \_keythms_listof_notecmd:n { \l__keythms_listofheading_shortnote_tl }
1550     }
1551   }
1552
1553 \cs_new:Npn \_keythms_listof_default_listcmd:nnnnnnn #1#2#3#4#5#6#7
1554   {

```

```

1555 \contentsline{ #1 }
1556 {
1557     \bool_if:NTF \l__keythms_listof_swapnumber_bool
1558     {
1559         \prop_item:Nn \g__keythms_thmnames_prop { #1 } ~ #2
1560     }
1561     {
1562         \numberline{ #2 }
1563         \prop_item:Nn \g__keythms_thmnames_prop { #1 }
1564     }
1565     \__keythms_listof_printheading:
1566 }
1567 { #4 }{ #3 }
1568 }
1569
1570 % NOTE: We still need to do this setup for [print-body] so that onlynamed works
1571 \cs_new_protected:Npn \__keythms_listof_listcmd_setup:nn #1#2
1572 { % #1 = keys, #2 = list command
1573     \group_begin:
1574     \keys_set:nn { keytheorems/listofheading } { #1 }
1575     \tl_if_empty:NTF \l__keythms_listofheading_contlabel_tl
1576     { #2 }
1577     {
1578         \bool_if:NF \l__keythms_listof_nocont_bool
1579         {
1580             \tl_if_empty:NF \l__keythms_listofheading_note_tl
1581             {
1582                 \tl_put_right:Nn \l__keythms_listofheading_note_tl { , ~ }
1583             }
1584             \tl_put_right:Nn \l__keythms_listofheading_note_tl
1585             {
1586                 \__keythms_thmuse_continues:V \l__keythms_listofheading_contlabel_tl
1587             }
1588             #2
1589         }
1590     }
1591     \group_end:
1592 }
1593
1594 % set default listcmd
1595 \cs_new_eq:NN \keythms_listof_listcmd:nnnnnnn
1596 \__keythms_listof_default_listcmd:nnnnnnn
1597
1598 \cs_if_exist:NTF \chapter
1599 { \cs_set_protected:Npn \__keythms_listof_titlecmd:n #1 { \chapter*{#1} } }
1600 { \cs_set_protected:Npn \__keythms_listof_titlecmd:n #1 { \section*{#1} } }
1601
1602 \hook_gput_code:nnn { begindocument } { . }
1603 { % try to detect ams classes
1604     \keythms_if_amsclass:TF
1605     {
1606         \prop_map_inline:Nn \g__keythms_thmnames_prop
1607         {
1608             \cs_set:cpn { l@ #1 }
1609             {
1610                 \@tocline{ 0 }{ 3pt plus 2pt }{ 0pt }
1611                 { \l__keythms_listof_numwidth_dim }{ }
1612             }
1613         }
1614     }

```

```

1613     }
1614   }
1615   {
1616     \prop_map_inline:Nn \g__keythms_thmnames_prop
1617     {
1618       \cs_set:cpn { l@ #1 }
1619       {
1620         \@dottedtocline{ 1 }{ 1.5em }
1621         { \l__keythms_listof_numwidth_dim }
1622       }
1623     }
1624   }
1625 }
1626
1627 \keythms_if_amsclass:TF
1628 {
1629   \keys_define:nn { keytheorems/listof } % adjust to class
1630   {
1631     numwidth .initial:n = 1.5pc,
1632   }
1633   \NewDocumentCommand \listofkeytheorems { 0{} }
1634   { % title command not customizable here
1635     \bool_gset_true:N \g__keythms_listof_writefile_bool
1636     \group_begin:
1637     \keys_set:nn { keytheorems/listof } { #1 }
1638     \bool_if:NT \l__keythms_listof_nochapskip_bool
1639     {
1640       \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1641     }
1642     \legacy_if_set_false:n { @filesw }
1643     \bool_if:NTF \l__keythms_listof_notitle_bool
1644     {
1645       \@starttoc{ thlist }{ }
1646     }
1647     { % ams classes don't expand title enough
1648       \protected@edef \l__keythms_tmpa_tl { \l__keythms_listof_title_tl }
1649       \@starttoc{ thlist }{ \l__keythms_tmpa_tl }
1650     }
1651     \group_end:
1652   }
1653 }
1654 {
1655   \NewDocumentCommand \listofkeytheorems { 0{} }
1656   {
1657     \bool_gset_true:N \g__keythms_listof_writefile_bool
1658     \group_begin:
1659     \keys_set:nn { keytheorems/listof } { #1 }
1660     \bool_if:NT \l__keythms_listof_nochapskip_bool
1661     {
1662       \cs_set_eq:NN \KeyThmsAddvspace \use_none:n
1663     }
1664     \bool_if:NF \l__keythms_listof_notitle_bool
1665     {
1666       \__keythms_listof_titlecmd:n { \l__keythms_listof_title_tl }
1667       \@mkboth % QUESTION: should this go in titlecmd ?
1668       { \MakeUppercase \l__keythms_listof_title_tl }
1669       { \MakeUppercase \l__keythms_listof_title_tl }
1670     }
1671   }

```



```

1671     \legacy_if_set_false:n { @filesw }
1672     \@starttoc{ thlist }
1673     \group_end:
1674 }
1675 }
1676 % ~ unlike thmtools we don't use the class's style of \listoffigures because
1677 % we want control over title-code, no-title, etc. But this means we have to guess
1678 % things like marks, sectioning command, etc.
1679
1680 \hook_gput_code:nnn { enddocument } { . }
1681 {
1682     \bool_if:NTF \g__keythms_listof_writefile_bool
1683     {
1684         \legacy_if:nT { @filesw }
1685         {
1686             \iow_new:N \tf@thlist
1687             \iow_open:Nn \tf@thlist { \c_sys_jobname_str.thlist }
1688         }
1689     }
1690     { % if .thlist file left over from previous run but not needed, clear it
1691         \file_if_exist:nT { \c_sys_jobname_str.thlist }
1692         {
1693             \iow_open:Nn \g_tmpa_iow { \c_sys_jobname_str.thlist }
1694             \iow_close:N \g_tmpa_iow
1695         }
1696     }
1697 }
1698
1699 % chapterospacehack (code translated from thmtools)
1700 \cs_new_eq:NN \KeyThmsAddvspace \addvspace
1701 \int_new:N \g_keythms_listof_prevchapter_int
1702 \int_gset:Nn \g_keythms_listof_prevchapter_int { 1 }
1703 % ~ if this is zero, bad things happen if title-code is changed; anyways don't
1704 % need addvspace at top
1705 \cs_new_protected:Npn \keythms_listof_chaptervspacehack: { }
1706 \cs_if_exist:cT { c@chapter }
1707 {
1708     \cs_if_eq:NNF \c@chapter \relax
1709     {
1710         \cs_set_protected:Npn \keythms_listof_chaptervspacehack:
1711         {
1712             \int_compare:nNnF { \value{chapter} } = { \g_keythms_listof_prevchapter_int }
1713             {
1714                 \addtocontents{ thlist }
1715                 {
1716                     \protect\KeyThmsAddvspace
1717                     { \keythms@listof@chaptervspace@dim }
1718                 }
1719                 \int_gset:Nn \g_keythms_listof_prevchapter_int { \value{chapter} }
1720             }
1721         }
1722     }
1723 }
1724
1725 %%%%%%%%%%%%%%%
1726 %%% \Autoref %%%
1727 %%%%%%%%%%%%%%%
1728

```

```

1729 \ProvideDocumentCommand { \Autoref } { s m }
1730 {
1731   \IfPackageLoadedTF { hyperref }
1732   {
1733     \group_begin:
1734     \cs_set_eq:NN \HyRef@testreftype \__keythms_Autoref_testreftype:w
1735     \IfBooleanTF { #1 } { \autoref*{#2} } { \autoref{#2} }
1736     \group_end:
1737   }
1738   { \msg_error:nn { keytheorems } { hyperref-Autoref } }
1739 }
1740
1741 \cs_new_protected:Npn \__keythms_Autoref_testreftype:w #1.#2\\
1742 {
1743   \cs_if_exist:cTF { #1 Autorefname }
1744   {
1745     \cs_set:Npe \HyRef@currentHtag
1746     {
1747       \exp_not:N \use:c { #1 Autorefname }
1748       \exp_not:N \c_space_token
1749     }
1750   }
1751   { \msg_warning:nnn { keytheorems } { no-Autorefname } { #1 } }
1752 }
1753
1754 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1755 %% Global Keys %%
1756 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
1757
1758 \keys_define:nn { keytheorems }
1759 {
1760   restate-counters .code:n =
1761   {
1762     \clist_map_inline:nn { #1 }
1763     { \tl_new:c { l_keythms_restate_current_##1_tl } }
1764     \clist_gput_right:Nn \g__keythms_restatecounters_clist { #1 }
1765   },
1766   restate-counters .initial:n = equation,
1767   continues-code .cs_set:Np = \__keythms_thmuse_continues:n #1,
1768   continues-code .initial:n =
1769   { % not sure how best to handle this translation
1770     \GetTranslation{keythms_continues}\pageref{#1}
1771   },
1772   qed-symbol .cs_set_protected:Np = \qedsymbol,
1773   overload .code:n = \__keythms_overload_code:,
1774   overload .value_forbidden:n = true,
1775   overload .usage:n = preamble,
1776   thmtools-compat .code:n =
1777   { % prevent loading the code again if key called twice
1778     \bool_if:NF \g__keythms_thmtoolscompat_bool
1779     { \__keythms_thmtoolscompat_code: }
1780   },
1781   thmtools-compat .value_forbidden:n = true,
1782   thmtools-compat .usage:n = preamble,
1783   store-all .code:n = \__keythms_storeall_code:,
1784   store-all .value_forbidden:n = true,
1785   store-all .usage:n = preamble,
1786   auto-translate .bool_gset:N = \g__keythms_autotranslate_bool,

```

```

1787     auto-translate    .initial:n = true,
1788   }
1789
1790   \cs_generate_variant:Nn \__keythms_thmuse_continues:n { V }
1791
1792   % \keytheoremset{<options>}
1793   \NewDocumentCommand \keytheoremset { m }
1794   {
1795     \keys_set:nn { keytheorems } { #1 }
1796   }
1797
1798   \cs_new_protected:Npn \__keythms_overload_code:
1799   {
1800     \RenewDocumentCommand { \newtheorem } { smomo }
1801     {
1802       \IfBooleanTF { ##1 }
1803       { \keythms_thm_newkeythm:nn { ##2 } { name=##4, numbered=no } }
1804       {
1805         \IfNoValueTF { ##3 }
1806         {
1807           \IfNoValueTF { ##5 }
1808           { \keythms_thm_newkeythm:nn { ##2 } { name=##4 } }
1809           { \keythms_thm_newkeythm:nn { ##2 } { name=##4, parent=##5 } }
1810         }
1811         { \keythms_thm_newkeythm:nn { ##2 } { name=##4, sibling=##3 } }
1812       }
1813     }
1814   }
1815
1816   \cs_new_protected:Npn \__keythms_thmtoolscompat_code:
1817   {
1818     \bool_gset_true:N \g__keythms_thmtoolscompat_bool
1819     \__keythms_overload_code: % since thmtools overwrites \newtheorem
1820     \ProvideDocumentCommand { \declaretheoremstyle } { 0{} m }
1821     {
1822       \declarekeytheoremstyle { ##2 } { ##1 }
1823     }
1824     \ProvideDocumentCommand { \declaretheorem } { 0{} m }
1825     {
1826       \newkeytheorem { ##2 } [ ##1 ]
1827     }
1828     \ProvideDocumentEnvironment { restatable } { 0{} m m }
1829     { % set store outside [] so keyless note is recognized
1830       \keys_set:nn { keytheorems/thmuse } { store=##3 }
1831       \begin{##2}[##1]
1832     }
1833     {
1834       \end{##2}
1835       \cs_new_protected:cpn { ##3 }
1836       { % make \foo and \foo* identical
1837         \peek_meaning_remove:NTF *
1838         { \use:c { __keythms_getthm_ ##3 _theorem } }
1839         { \use:c { __keythms_getthm_ ##3 _theorem } }
1840       }
1841     }
1842     \ProvideDocumentCommand { \listoftheorems } { } { \listofkeytheorems }
1843     \ProvideDocumentCommand { \addtotheorempreheadhook } { o m }
1844     {

```

```

1845 \IfNoValueTF { ##1 }
1846 { \addtotheoremhook { prehead } { ##2 } }
1847 { \addtotheoremhook [ ##1 ] { prehead } { ##2 } }
1848 }
1849 \ProvideDocumentCommand { \addtotheorempostheadhook } { o m }
1850 {
1851 \IfNoValueTF { ##1 }
1852 { \addtotheoremhook { posthead } { ##2 } }
1853 { \addtotheoremhook [ ##1 ] { posthead } { ##2 } }
1854 }
1855 \ProvideDocumentCommand { \addtotheoremprefoothook } { o m }
1856 {
1857 \IfNoValueTF { ##1 }
1858 { \addtotheoremhook { prefoot } { ##2 } }
1859 { \addtotheoremhook [ ##1 ] { prefoot } { ##2 } }
1860 }
1861 \ProvideDocumentCommand { \addtotheorempostfoothook } { o m }
1862 {
1863 \IfNoValueTF { ##1 }
1864 { \addtotheoremhook { postfoot } { ##2 } }
1865 { \addtotheoremhook [ ##1 ] { postfoot } { ##2 } }
1866 }
1867 \clist_new:N \l__keythms_tcbshaded_keys_clist
1868 \clist_new:N \l__keythms_tcbthmbox_keys_clist
1869 \keys_define:nn { keytheorems/thm/shaded }
1870 {
1871 textwidth .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { width=##1 },
1872 bgcolor .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { colback=##1 },
1873 rulewidth .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { boxrule=##1 },
1874 rulecolor .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { colframe=##1 },
1875 margin .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { boxsep=##1 },
1876 padding .meta:n = { margin=##1 },
1877 leftmargin .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { left~skip=##1 },
1878 rightmargin .code:n = \clist_put_right:Nn \l__keythms_tcbshaded_keys_clist { right~skip=##1 }
1879 }
1880 \keys_define:nn { keytheorems/thm/thmbox }
1881 {
1882 L .code:n =
1883 {
1884 \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1885 { keythms_tcbthmbox_L }
1886 },
1887 M .code:n =
1888 {
1889 \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1890 { keythms_tcbthmbox_M }
1891 },
1892 S .code:n =
1893 {
1894 \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1895 { keythms_tcbthmbox_S }
1896 },
1897 underline .choice:,
1898 underline / true .code:n = {},
1899 underline / false .code:n =
1900 {
1901 \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist
1902 { boxed~title~style={bottomrule=0pt} }

```

```

1903     },
1904     underline .default:n = true,
1905     nounderline .meta:n = { underline=false },
1906     cut .choice:,
1907     cut / true .code:n = {},
1908     cut / false .code:n =
1909     {
1910         \clist_put_right:Nn \l__keythms_tcbthmbox_keys_clist { unbreakable }
1911     },
1912     cut .default:n = true,
1913     nocut .meta:n = { cut=false },
1914     thickness .code:n = % could also add keys to clist with changed dimens; which is better?
1915     {
1916         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1917         { keythms_tcbbox }
1918         { \dim_set:Nn \l_keythms_tcbthmbox_thickness_dim { ##1 } }
1919     },
1920     leftmargin .code:n =
1921     {
1922         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1923         { keythms_tcbbox }
1924         { \dim_set:Nn \l_keythms_tcbthmbox_leftmargin_dim { ##1 } }
1925     },
1926     rightmargin .code:n =
1927     {
1928         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1929         { keythms_tcbbox }
1930         { \dim_set:Nn \l_keythms_tcbthmbox_rightmargin_dim { ##1 } }
1931     },
1932     hskip .code:n =
1933     {
1934         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1935         { keythms_tcbbox }
1936         { \dim_set:Nn \l_keythms_tcbthmbox_hskip_dim { ##1 } }
1937     },
1938     vskip .code:n =
1939     {
1940         \hook_gput_code:nnn { keytheorems/\l__keythms_thm_envname_tl/prehead }
1941         { keythms_tcbbox }
1942         { \dim_set:Nn \l_keythms_tcbthmbox_vskip_dim { ##1 } }
1943     },
1944 }
1945 \dim_new:N \l_keythms_tcbthmbox_thickness_dim
1946 \dim_set:Nn \l_keythms_tcbthmbox_thickness_dim { 0.6pt }
1947 \dim_new:N \l_keythms_tcbthmbox_leftmargin_dim
1948 \dim_set:Nn \l_keythms_tcbthmbox_leftmargin_dim { 0.7\parindent } % use \parindent? thmbox does
1949 \dim_new:N \l_keythms_tcbthmbox_rightmargin_dim
1950 \dim_set:Nn \l_keythms_tcbthmbox_rightmargin_dim { 0pt }
1951 \dim_new:N \l_keythms_tcbthmbox_hskip_dim
1952 \dim_set:Nn \l_keythms_tcbthmbox_hskip_dim { 0.2em }
1953 \dim_new:N \l_keythms_tcbthmbox_vskip_dim
1954 \dim_set:Nn \l_keythms_tcbthmbox_vskip_dim { 0.2em }
1955 \msg_new:nnn { keytheorems } { mdframed-undefined }
1956 {
1957     keytheorems~does~not~define~the~'mdframed'~key.~
1958     Consider~using~the~'tcolorbox'~key~instead.
1959 }
1960 \keys_define:nn { keytheorems/thm }

```

```

1961 {
1962   shaded .code:n =
1963   {
1964     \clist_clear:N \l__keythms_tcbshaded_keys_clist
1965     \keys_set:nn { keytheorems/thm/shaded } { ##1 }
1966     % FIX: surely a better way to do this
1967     \RequirePackage{tcolorbox}
1968     \pgfkeysifdefined{/tcb/keythms_tcbshaded_default/.@cmd} % even worth it?
1969     {}
1970     {
1971       \tcbset % wish I could do this outside of key but can't assume tcb loaded
1972       {
1973         keythms_tcbshaded_default/.style=
1974         {
1975           sharp~corners = all,
1976           boxrule = Opt,
1977           left = Opt, right = Opt,
1978           top = Opt, bottom = Opt,
1979           parbox = false,
1980         }
1981       }
1982     }
1983     \keys_set:ne { keytheorems/thm }
1984     {
1985       tcolorbox-no-titlebar =
1986       {
1987         keythms_tcbshaded_default,
1988         \l__keythms_tcbshaded_keys_clist
1989       }
1990     }
1991   },
1992   thmbox .code:n = % adapted from https://tex.stackexchange.com/a/236230/208544
1993   {
1994     \clist_clear:N \l__keythms_tcbthmbox_keys_clist
1995     \keys_set:nn { keytheorems/thm/thmbox } { ##1 }
1996     % FIX: surely a better way to do this
1997     \RequirePackage{tcolorbox}
1998     \tcbuselibrary{skins,breakable}
1999     \pgfkeysifdefined{/tcb/keythms_tcbthmbox_default/.@cmd} % even worth it?
2000     {}
2001     {
2002       \tcbset{
2003         keythms_tcbthmbox_default/.style={
2004           enhanced,
2005           breakable,
2006           sharp~corners=all,
2007           right=\l_keythms_tcbthmbox_hskip_dim,
2008           left=\l_keythms_tcbthmbox_hskip_dim,
2009           top=\l_keythms_tcbthmbox_vskip_dim,
2010           bottom=\l_keythms_tcbthmbox_vskip_dim,
2011           coltitle=black,
2012           frame~engine=empty,
2013           interior~titled~engine=empty,
2014           interior~engine=empty,
2015           extras~broken={
2016             frame~engine=empty,
2017             interior~titled~engine=empty,
2018             interior~engine=empty

```

```

2019     },
2020     parbox=false,
2021     % even though frame isn't drawn, makes spacing correct
2022     boxrule=0.5\l_keythms_tcbthmbox_thickness_dim,
2023     attach~boxed~title~to~top~left={
2024         xshift=-\l_keythms_tcbthmbox_leftmargin_dim,
2025     },
2026     boxed~title~style={
2027         empty,
2028         size=minimal,
2029         bottom=0.7ex,
2030         top=0ex,
2031         % ditto
2032         bottomrule=0.5\l_keythms_tcbthmbox_thickness_dim,
2033     },
2034     left~skip=\l_keythms_tcbthmbox_leftmargin_dim,
2035     right~skip=\l_keythms_tcbthmbox_rightmargin_dim,
2036     overlay~unbroken={
2037         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2038             (title.south~west)
2039             --
2040             (title.south~east);
2041         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2042             (frame.north~west)
2043             |-
2044             ([xshift=10mm]frame.south~west);
2045     },
2046     overlay~first={
2047         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2048             (title.south~west)
2049             --
2050             (title.south~east);
2051         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2052             (frame.north~west)
2053             --
2054             (frame.south~west);
2055     },
2056     overlay~middle={
2057         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2058             (frame.north~west)
2059             --
2060             (frame.south~west);
2061     },
2062     overlay~last={
2063         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2064             (frame.north~west)
2065             |-
2066             ([xshift=10mm]frame.south~west);
2067     }
2068 },
2069 keythms_tcbthmbox_L/.style={
2070     overlay~unbroken={
2071         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2072             (title.south~west)
2073             --
2074             (title.south~east);
2075         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2076             (frame.north~west)

```

```

2077         |-
2078         (frame.south~east)
2079         -|
2080         (frame.north~east);
2081     },
2082     overlay~first={
2083         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2084             (title.south~west)
2085             --
2086             (title.south~east);
2087         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2088             (frame.north~west)
2089             --
2090             (frame.south~west);
2091         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2092             (frame.north~east)
2093             --
2094             (frame.south~east);
2095     },
2096     overlay~middle={
2097         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2098             (frame.north~west)
2099             --
2100             (frame.south~west);
2101         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2102             (frame.north~east)
2103             --
2104             (frame.south~east);
2105     },
2106     overlay~last={
2107         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2108             (frame.north~west)
2109             |-
2110             (frame.south~east)
2111             -|
2112             (frame.north~east);
2113     }
2114 },
2115 keythms_tcbthmbox_M/.style={},
2116 keythms_tcbthmbox_S/.style={ % first and middle same as M
2117     overlay~unbroken={
2118         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2119             (title.south~west)
2120             --
2121             (title.south~east);
2122         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2123             (frame.north~west)
2124             --
2125             (frame.south~west);
2126     },
2127     overlay~last={
2128         \draw[line~width=\l_keythms_tcbthmbox_thickness_dim]
2129             (frame.north~west)
2130             --
2131             (frame.south~west);
2132     }
2133 },
2134 }

```



```

2135     }
2136     \keys_set:ne { keytheorems/thm }
2137     {
2138         tcolorbox =
2139         {
2140             keythms_tcbthmbox_default,
2141             \l__keythms_tcbthmbox_keys_clist
2142         }
2143     }
2144 },
2145 thmbox .default:n = M,
2146 mdframed .code:n = \msg_error:nn { keytheorems } { mdframed-undefined },
2147 }
2148 }
2149
2150 \cs_new_protected:Npn \__keythms_storeall_code:
2151 {
2152     \cs_set_eq:NN \__keythms_withhooks_begin:nn \__keythms_grab_begin:nn
2153     \cs_set_eq:NN \__keythms_withhooks_begin:nnn \__keythms_grab_begin:nnn
2154     \cs_set_eq:NN \__keythms_withhooks_begin:nnV \__keythms_grab_begin:nnV
2155     \cs_set_eq:NN \__keythms_withhooks_end:n \__keythms_grab_end:n
2156 }
2157
2158 \hook_gput_code:nnn { begindocument/before } { . }
2159 { % use 'provide' in case user defines their own translation in preamble
2160     \ProvideTranslationFallback { keythms_listof_title } { List-of~Theorems }
2161     \ProvideTranslationFallback { keythms_continues } { continuing~from~p.\, }
2162     \bool_if:NT \g__keythms_autotranslate_bool
2163     {
2164         \ProvideTranslation { English } { keythms_listof_title } { List-of~Theorems }
2165         \ProvideTranslation { English } { keythms_continues } { continuing~from~p.\, }
2166         % from DeepL; I don't know these languages!
2167         \ProvideTranslation { French } { keythms_listof_title } { Liste~des~théorèmes }
2168         \ProvideTranslation { French } { keythms_continues } { suite~de~la~p.\, }
2169         \ProvideTranslation { German } { keythms_listof_title } { Liste~der~Theoreme }
2170         \ProvideTranslation { German } { keythms_continues } { weiter~von~Seite~ }
2171         \ProvideTranslation { Spanish } { keythms_listof_title } { Lista~de~teoremas }
2172         \ProvideTranslation { Spanish } { keythms_continues } { continúa~de~la~p.\, }
2173     }
2174 }
2175
2176 \ProcessKeyOptions[keytheorems]
2177
2178 \file_input_stop:

```

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