

Intermediate Latex

Introduction to Beamer

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Support documents at <https://www.edpif.org/documents/latex/intermediate>

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 - Examples
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 - More control on presentations
- 2 Overlays
 - Basic principle
 - Overlay specifications
- 3 Examples of animation and multimedia
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 - Animation with animate package
 - Movies with multimedia or embedvideo packages

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 - Automatic creation of an handout (flatten version of the presentation)
 - All (almost) the LaTeX formatting tools (namely math)
- Drawbacks: requires compilation, type code instead to click.

The basic presentation structure

- Uses class `beamer`
- Slides defined by environment `frame`
- Sectioning commands: only `\section` and `\subsection`

Minimal code:

```

1 \begin{document}
2 \begin{frame}{Outline}
3 \tableofcontents
4 \end{frame}
5 \section{Introduction}
6 \begin{frame}{First~slide}
7 Some content
8 \[ a^2= b^2 + c^2 \]
9 \end{frame}
10 \end{document}

```


Outline

Introduction

A set of small, faint navigation icons typically found in Beamer presentations, including symbols for back, forward, search, and other navigation functions.

First slide

Some content

$$a^2 = b^2 + c^2$$
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Controlling appearance

- **General defaults** The page size is typically 128mm cm \times 96 mm, ensuring that the usual sized fonts produce good results.
The default `aspectratio=43`, can be changed to `aspectratio=169` (§8.3).
The body text font is by default a sans-serif font (keep it);

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- From manual § 15.1 :
 - **Outer Themes:** what the “outside” or “border” of the presentation slides should look like: head- and footlines, logo position, sidebar/navigation symbols/bars or not. It also specifies where the frametitle is put and how it is typeset. Globally classified according to the way to display the ToC on each frame.

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 - **Inner Themes:** how certain elements of a presentation are typeset. This includes all elements that are at the “inside” of the frame. This includes all enumerations, itemize, block and theorem environments, table of contents.

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 - **Inner Themes:** how certain elements of a presentation are typeset. This includes all elements that are at the “inside” of the frame. This includes all enumerations, itemize, block and theorem environments, table of contents.
- This presentation uses: `\usetheme{Berlin}` `\useoutertheme{infolines}`
`\useinnertheme{rounded}` `\usefonttheme[onlymath]{serif}`

List of standard (outer) themes

(Classified according to table of contents navigation, from beameruserguide.pdf)

without Navig. Bars

default, boxes

Bergen

Boadilla

Madrid

AnnArbor

CambridgeUS

EastLansing

Pittsburgh

Rochester

Tree-Like Navigation Bar

Antibes

JuanLesPins

Montpellier

Table of Contents Sidebar

Berkeley

PaloAlto

Goettingen

Marburg

Hannover

Mini Frame Navigation

Berlin

Ilmenau

Dresden

Darmstadt

Frankfurt

Singapore

Szeged

Gallery of styles

Some nice examples on Internet :

- https://deic-web.uab.cat/~iblanes/beamer_gallery
- <http://mcclnews.free.fr/latex/beamergalerie/completsgalerie.html>
- <https://fr.overleaf.com/gallery/tagged/presentation>

Note: If you aim to customize them, many settings must be adjusted with the generic command `\setbeamertheme` (§16.3) instead of the standard LaTeX commands

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Experiment with two themes and colors sets

Omitted `\documentclass{beamer}` and `\end{document}`

```
\usefonttheme[onlymath]{serif}
\usecolortheme{seahorse}
\begin{document}
\section{Section Introduction}
\subsection{First subsection}
\begin{frame}{My first slide}
Some content in theme "Berlin"
(color "seahorse")\\
& math reset to serif
\end{frame}
\begin{frame}{My second slide}
\alert{Some other content:}
\[ a^2= b^2 + c^2 \]
\end{frame}
\subsection{Second subsection}
\begin{frame}{My third slide}
Some alternate content
\end{frame}
%further content
\section{The very nice following section}
```

```
1 \usecolortheme{beetle}
2 \begin{document}
3 \section{Section Introduction}
4 \subsection{First subsection}
5 \begin{frame}{My first slide}
6 Some content in theme "Marburg"
7 (color "beetle")\\
8 & math reset to serif
9 \end{frame}
10 \begin{frame}{My second slide}
11 \alert{Some other content:}
12 \[ a^2= b^2 + c^2 \]
13 \end{frame}
14 \subsection{Second subsection}
15 \begin{frame}{My third slide}
16 Some alternate content
17 \end{frame}
18 %further content
19 \section{The very nice following section}
20 \subsection{Third subsection}
```


My first slide

Some content in theme "Berlin" (color "seahorse")
& math reset to serif

My second slide

Some other content:

$$a^2 = b^2 + c^2$$

My third slide

Some alternate content

My fourth slide

Some final content (highlighted with `\alert{}`)

For more about themes, see :

- The manual § 15. (highlighted with `\structure{}`)

- The page <http://mcclnews.free.fr/latex/beamergalerie/completsгалerie.html>.

This page is part of a web site with a good tutorial, in French :
<http://mcclnews.free.fr/latex/introbeamer.php>.

- The page
http://deic.uab.es/~iblanes/beamer_gallery/

My fifth slide

Some ultimate content

My first slide

Some content in theme "Marburg" (color "beetle")
& math reset to serif

My second slide

Some other content:

$$a^2 = b^2 + c^2$$

My third slide

Some alternate content

My fourth slide

Some final content ((highlighted with `\alert{}`))

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My fifth slide

Some ultimate content

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Metadata, Title page, Table of contents

Some important elements can be added in the following way:

Metadata (in the preamble)

```
\title[A-LaTeX]{Intermediate LaTeX for non-beginners}  
\subtitle[A-LaTeX]{Hannover theme}  
\institute[SU]{Sorbonne Université\\Laboratoire Kastler Brossel}  
\date{\today}  
\author[Jean Hare]{\href{mailto:jean.hare@lkb.ens.fr}{Jean Hare}}
```

Titlepage (using metadata):

```
\begin{frame}  
  \titlepage  
\end{frame}
```

Table of contents

```
\begin{frame}{Outline}  
  \tableofcontents  
\end{frame}
```

Intermediate LaTeX for non-beginners

Hannover theme

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November 11, 2023

Outline

My first slide

Some content in theme "Hannover" (defaultcolor)

Configuring Table of contents

- Table of contents can be adapted to context with options :
`currentsection`, `currentsubsection`, `firstsection=<num>`,
`hideallsubsections`, `hideothersubsections`, `pausesections`, etc.
(see manual § 10.5)
- Table of content can be repeated at each section or subsection with the code (in preamble)

```
\AtBeginSection[]{%  
  \begin{frame}{Sommaire}  
    \tableofcontents[currentsection]  
  \end{frame}  
}  
  
\AtBeginSubsection[]{%  
  \begin{frame}{Dans la section}  
    \tableofcontents[currentsection,currentsubsection]  
  \end{frame}  
}
```


Structuring elements in frames

① Columns (like on this frame)

```
\begin{columns}  
\begin{column}{0.5\linewidth}  
some content  
\end{column}  
\begin{column}{0.5\linewidth}  
other content  
\end{column}  
\end{columns}
```

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other content
\end{column}
\end{columns}
```

② Itemize & enumerate, like here

- Same syntax as standard LaTeX
- Round labels are selected with

```
\useinnertheme{rounded}
```

- Doesn't work with `enumitem`,
tune the lengths just before, like

```
\setlength{\leftmarginii}{1.5ex}
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③ Block environments:

This is an ordinary **block**

Really ordinary !

This is an **alertblock**

Really alert !

This is an **exampleblock**

It is always useful...

produced with:

```
\begin{<blocktype>}{<blocktitle>}
block content
\end{<blocktype>}
```

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\end{<blocktype>}
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For more boxes, see manual § 12.5 and look at `tcolorbox`

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Options for `\documentclass` and `frame`

`\documentclass[...]{beamer}`

- `handout`, `article` (select document target)
- `aspectratio`
- `hyperref`=*{list of hyperref's options}*
- `xcolor`=*{list of xcolor's options}*

Options for `\documentclass` and `frame`

`\documentclass[...]{beamer}`

- `handout`, `article` (select document target)
- `aspectratio`
- `hyperref`={*list of hyperref's options*}
- `xcolor`={*list of xcolor's options*}

`\begin{frame}[...]{frametitle}`

- `fragile` (enable verbatim content)
- `label`=*name*
- `plain` (suppress outer bars)
- `allowframebreaks`=*fraction* (evil)
- `noframenumbering` (don't increment `framenumbers`)
- `shrink`=*minimal percentage* (evil)
- `squeeze` (kills vertical white space, evil)

Handling frames

- To restrict the frame set, use `\includeonlyframes{label-list}` where labels were defined by `label` option of frames

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- Elements or frame can be included only in different versions with : `\mode<beamer>{...}` and `\mode<handout>{...}`, like :

```
\mode<handout>{\renewcommand{\alert}[1]{\textbf{#1}}}
```

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- If a frame must not have any border elements, use option **plain**
- If a frame must have verbatim contents, use option **fragile**
- Frame transitions can be managed, **with moderation** (manual § 14.3)

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Managing the layers

The handling of `layers` (called “`Overlays`” in the manual) is a great interest of Beamer (with pdfLaTeX or LuaLaTeX).

- Basically, if you want that a whole frame is not displayed all at once, but its points once-by-once, you will ask Beamer to splits the `frame` into successive `slides`.
- The most simple command for this purpose is the command `\pause` that you can insert between any paragraphs or structures.
Notice: Doesn't work inside \mathcal{AMS} -math align-like blocks
- As a (dummy) example, you could write :

```
\begin{itemize}
\item 2 is prime (two divisors: 1 and 2).
\pause
\item 3 is prime (two divisors: 1 and 3).
\pause
\item 4 is not prime (\alert{three} divisors: 1, 2, and 4).
\end{itemize}
```

Example (slide 1)

`\pause` in itemize (inside block)

- 2 is prime (two divisors: 1 and 2).

Example (slide 2)

`\pause` in itemize (inside block)

- 2 is prime (two divisors: 1 and 2).
- 3 is prime (two divisors: 1 and 3).

Example (slide 3)

`\pause` in itemize (inside block)

- 2 is prime (two divisors: 1 and 2).
- 3 is prime (two divisors: 1 and 3).
- 4 is not prime (**three** divisors: 1, 2, and 4).

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The `<...>` syntax

(slide 1)

- Typing endless `\pause` is rather tedious and does not provide the whole power of overlays

The `<...>` syntax

(slide 2)

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The `<...>` syntax

(slide 3)

- Typing endless `\pause` is rather tedious and does not provide the whole power of overlays
- For this purpose, Beamer introduces a new syntax of optional argument, using so called “pointed brackets” `<...>`
- The content of `<...>` is a range of slides on the which the command must be executed. E.g. `<1-3,5-8>` selects 1 to 3 and 5 to 8.

The `<...>` syntax

(slide 4)

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- The content of `<...>` is a range of slides on the which the command must be executed. E.g. `<1-3,5-8>` selects 1 to 3 and 5 to 8.
- **Most commands specific to Beamer** accept this parameter, and many commands of LaTeX are redefined to handle it, namely `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, `\color`, etc. (§9.3)

The `<...>` syntax

(slide 5)

- Typing endless `\pause` is rather tedious and does not provide the whole power of overlays
- For this purpose, Beamer introduces a new syntax of optional argument, using so called “pointed brackets” `<...>`
- The content of `<...>` is a range of slides on the which the command must be executed. E.g. `<1-3,5-8>` selects 1 to 3 and 5 to 8.
- Most commands specific to Beamer **accept this parameter**, and many commands of LaTeX are redefined to handle it, namely `\textbf`, `\textit`, `\textsl`, `\textrm`, `\textsf`, `\color`, etc. (§9.3)
- For example this frame contains in the fourth `\item`:

```
\item \textbf<4>{Most command specific to Beamer}  
  \alert<5>{accept this parameter} ...
```

Another (funny) example

(slide 1)

This syntax enable some funny (but not really useful) things like:

Reverse order

- ③ 4 is not prime (three divisors: 1, 2, and 4).

Another (funny) example

(slide 2)

This syntax enable some funny (but not really useful) things like:

Reverse order

- ② 3 is prime (two divisors: 1 and 3).
- ③ 4 is not prime (three divisors: 1, 2, and 4).

Another (funny) example

(slide 3)

This syntax enable some funny (but not really useful) things like:

Reverse order

- ➊ 2 is prime (two divisors: 1 and 2).
- ➋ 3 is prime (two divisors: 1 and 3).
- ➌ 4 is not prime (three divisors: 1, 2, and 4).

Another (funny) example

(slide 4)

This syntax enable some funny (but not really useful) things like:

Reverse order

- ❶ 2 is prime (two divisors: 1 and 2).
- ❷ 3 is prime (two divisors: 1 and 3).
- ❸ 4 is not prime (three divisors: 1, 2, and 4).

which is coded as:

```
\begin{enumerate}  
\item<3-4> 2 is prime (two divisors: 1 and 2).  
\item<2-4> 3 is prime (two divisors: 1 and 3).  
\item<1-4> 4 is not prime (three divisors: 1, 2, and 4).  
\end{enumerate}
```

Incremental specification

(slide 1)

- Manually enter and keep up-to-date slides numbers is cumbersome.

Incremental specification

(slide 2)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:

Incremental specification

(slide 3)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:
 - The range can end with the `-` alone, meaning “until the end of the frame”.
E.g. in the previous example `<2-4>` would be written simply `<2->`.

Incremental specification

(slide 4)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:
 - The range can end with the `-` alone, meaning “until the end of the frame”.
E.g. in the previous example `<2-4>` would be written simply `<2->`.
 - In the same way, `<1-4>` could be written `<-4>` to start from the first.

Incremental specification

(slide 5)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:
 - The range can end with the `-` alone, meaning “until the end of the frame”.
E.g. in the previous example `<2-4>` would be written simply `<2->`.
 - In the same way, `<1-4>` could be written `<-4>` to start from the first.
 - The range can be defined as **incremental** by using `<+->` which means that the current slide number will be used, and incremented at the end.

Incremental specification

(slide 6)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:
 - The range can end with the `-` alone, meaning “until the end of the frame”.
E.g. in the previous example `<2-4>` would be written simply `<2->`.
 - In the same way, `<1-4>` could be written `<-4>` to start from the first.
 - The range can be defined as **incremental** by using `<+>` which means that the current slide number will be used, and incremented at the end.

Hence the previous:

```
\begin{itemize}  
\item<1-> my first item,  
\item<2-> my second item.  
\end{itemize}
```

Incremental specification

(slide 7)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:
 - The range can end with the `-` alone, meaning “until the end of the frame”.
E.g. in the previous example `<2-4>` would be written simply `<2->`.
 - In the same way, `<1-4>` could be written `<-4>` to start from the first.
 - The range can be defined as **incremental** by using `<+>` which means that the current slide number will be used, and incremented at the end.

Hence the previous:

becomes:

```
\begin{itemize}
\item<1-> my first item,
\item<2-> my second item.
\end{itemize}
```

```
\begin{itemize}
\item<+> my first item,
\item<+> my second item.
\end{itemize}
```

Incremental specification

(slide 8)

- Manually enter and keep up-to-date slides numbers is cumbersome.
- Fortunately, Beamer provides shortcuts:
 - The range can end with the `-` alone, meaning “until the end of the frame”. E.g. in the previous example `<2-4>` would be written simply `<2->`.
 - In the same way, `<1-4>` could be written `<-4>` to start from the first.
 - The range can be defined as **incremental** by using `<+-->` which means that the current slide number will be used, and incremented at the end.

Hence the previous:

becomes:

```
\begin{itemize}
\item<1-> my first item,
\item<2-> my second item.
\end{itemize}
```

```
\begin{itemize}
\item<+--> my first item,
\item<+--> my second item.
\end{itemize}
```

- Incremental overlay specification is **inherited**, allowing the more simple:

```
\begin{itemize}[<+-->]
\item my first item,
...
```

Commands controlling overlay

Beamer defines a bunch of commands intended to control overlays:

- `\only<...>{text}` Throws away `text` content on slides not in `<...>`
- `\onslide<...>{text}` Same, but when hidden `text` still takes space.
- `\visible<...>{text}` Same.
- `\uncover<...>{text}` Same, but also handle transparency.
- `\invisible<...>{text}` Opposite of `\visible`
- `\alt<...>{text1}{text2}` Alternates between `text1` and `text2` for `<...>`.
- `\temporal<...>{before}{inside}{after}` Alternate between three texts depending on slide index `before`, `inside` or after the range of `<...>`.

For the commands `\only` and `\alt` the `<...>` can also be *after* the `text`. Then `\only` can be used to make commands `<...>`-aware (§9.3) like in:

```
\newcommand{\myblue}{\only{\color{blue}}}  
\myblue<2> This text is blue only on slide 2.
```

Finally, `\only` and `\onslide` without `text` argument work as toogles.

Much more options, described in §9.4 to 9.6

Action specifications

- Inside `<...>` it is possible to add some **action** specifications
- Action are specified after the slide range & a `|` and followed by `@` and the target slide or range. For example one can write:

```
\item<3-|alert@4> Shown from slide 3 on, alerted on slide 4.
```

which set the `\alert` for item 3 only in slide 4.

- Actions can be defined for `\item`, `\action`, `\begin{actionenv}` and the block environments and the possible actions are by default, `alert`, `uncover`, `only`, `visible`, `invisible`, but other can be defined by the user. See manual § 9.6.3
- Simple example using `uncover` with specified transparency:

```
\setbeamercovered{transparent=30}
\begin{itemize}[<+ -|uncover@+>]
\item first
\item second
\item third
\end{itemize}
```


Example with uncover

- first
- second
- third

Example with uncover

- first
- second
- third

Example with uncover

- first
- second
- **third**

Summary

1

Beamer

- Configuration
- Examples
- Elements in presentation
- More control on presentations

2

Overlays

- Basic principle
- Overlay specifications

3

Examples of animation and multimedia

- Animation with multimedia package
- Animation with animate package
- Movies with multimedia or embedvideo packages

In this section

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Beamer

- Configuration
- Examples
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- More control on presentations

2

Overlays

- Basic principle
- Overlay specifications

3

Examples of animation and multimedia

- Animation with `multimedia` package
- Animation with `animate` package
- Movies with `multimedia` or `embedvideo` packages

Animate with multimedia's `\animate` (I/III)

Beamer has a companion package: `multimedia`

Animate with multimedia's \animate (I/III)

Beamer has a companion package: `multimedia`

Multipage PDF (see `rot-sol.tex`)

Create it e.g. with `standalone` class with option `tikz` & PGF `\foreach` loop.

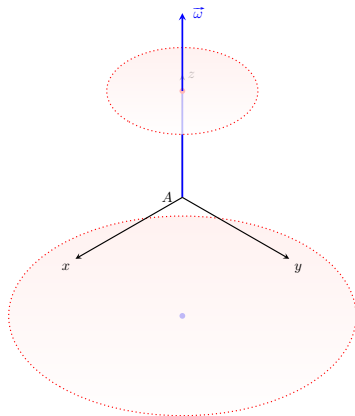
helpermacro.tex To `\input` somewhere in your document preamble:

```
% helper macro for animation, to be placed in tikzpicture
\NewDocumentCommand{\ShowSlide}{s0{0.9}mm}{%
% #2: optionnal fraction of linewidth #3 :filename #4 page number
\IfBooleanTF{#1}{% starred version : show on all slides
  \node<#4->{\includegraphics[page=#4,width=#2\linewidth]{#3}};
}{% un-starred version : show only on one slide
  \node<#4-#4>{\includegraphics[page=#4,width=#2\linewidth]{#3}};
}}
```

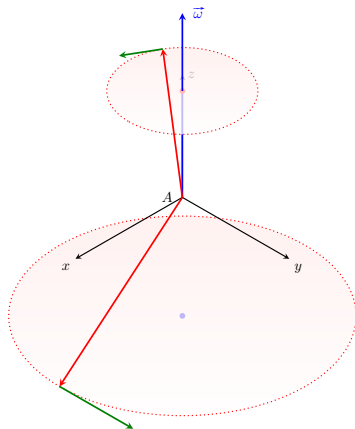
animate1.tex Input in a frame (& in minipage), to create a bunch of slides
`\animate` asks the viewer (Acrobat reader) to show `<...>` as fast as possible.

```
\animate<2-73>
\begin{tikzpicture}
\ShowSlide*[0.5]{rot-sol.pdf}{1} % put fixed background image
\foreach\ii in {2,...,73} {\ShowSlide[0.5]{rot-sol.pdf}{\ii}}
\end{tikzpicture}
```

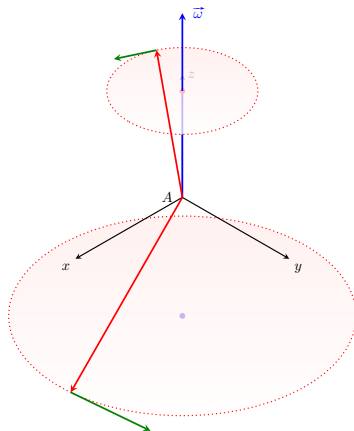
Animate with multimedia's \animate (II/III)



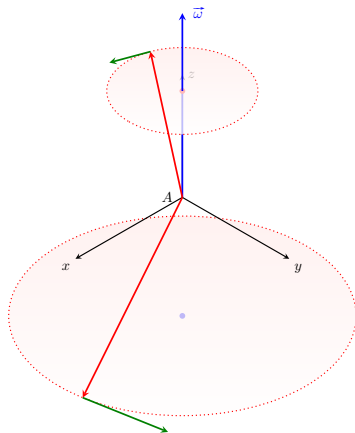
Animate with multimedia's \animate (II/III)



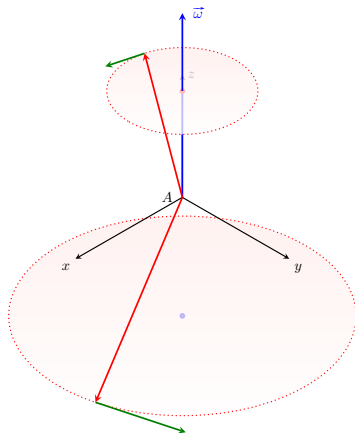
Animate with multimedia's \animate (II/III)



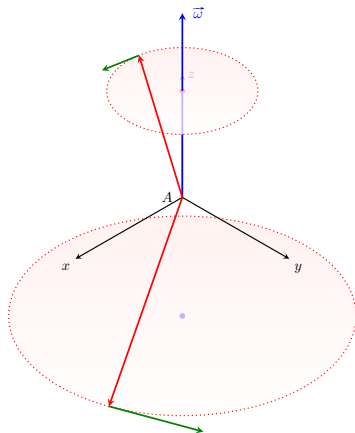
Animate with multimedia's \animate (II/III)



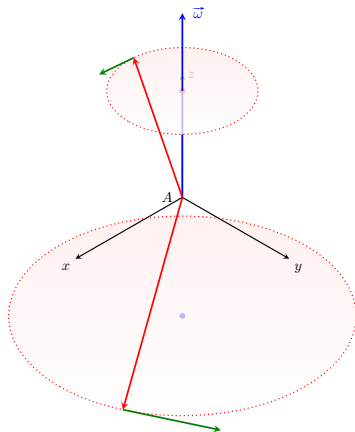
Animate with multimedia's \animate (II/III)



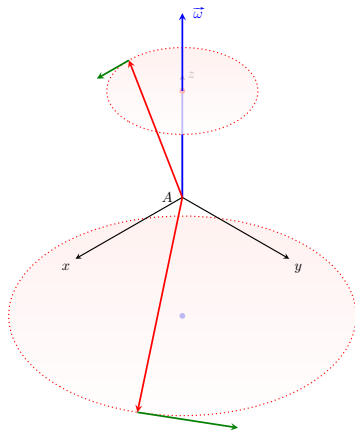
Animate with multimedia's \animate (II/III)



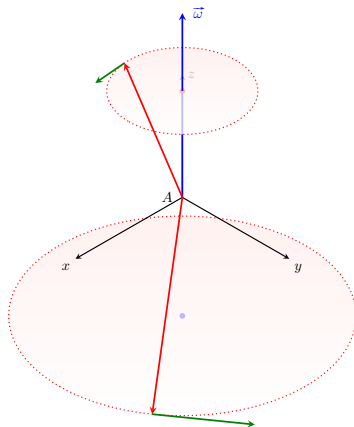
Animate with multimedia's \animate (II/III)



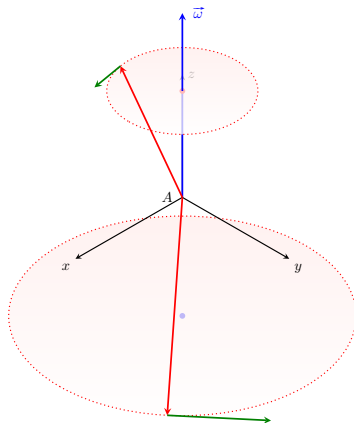
Animate with multimedia's \animate (II/III)



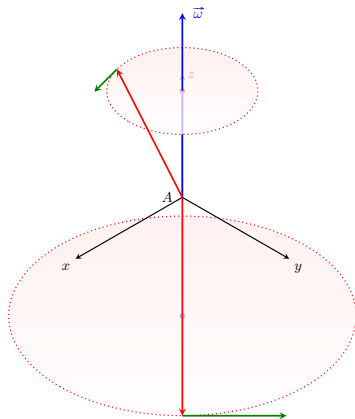
Animate with multimedia's \animate (II/III)



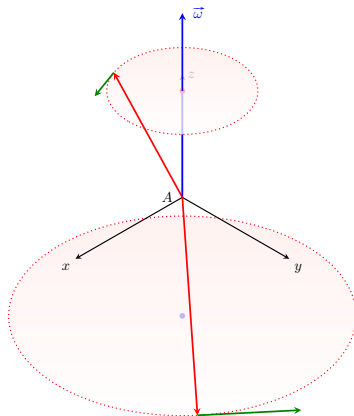
Animate with multimedia's \animate (II/III)



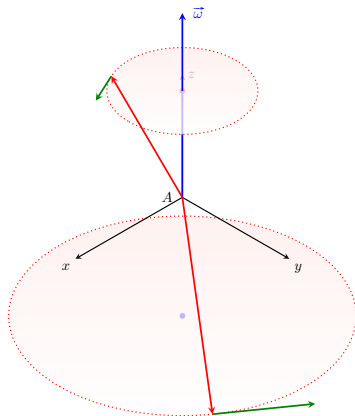
Animate with multimedia's \animate (II/III)



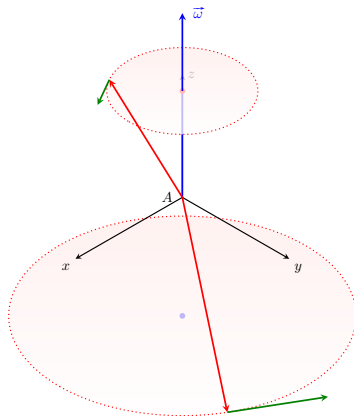
Animate with multimedia's \animate (II/III)



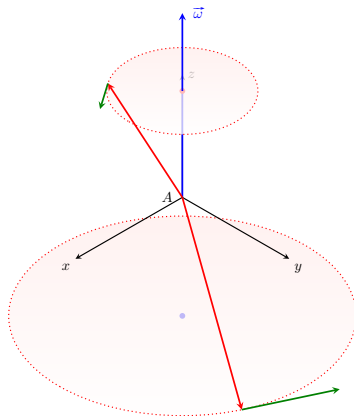
Animate with multimedia's \animate (II/III)



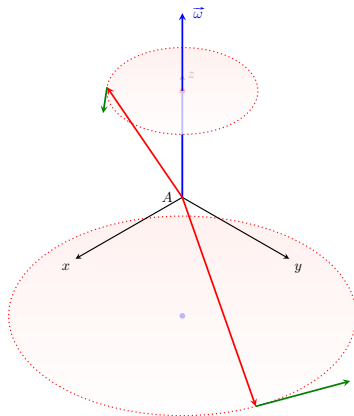
Animate with multimedia's \animate (II/III)



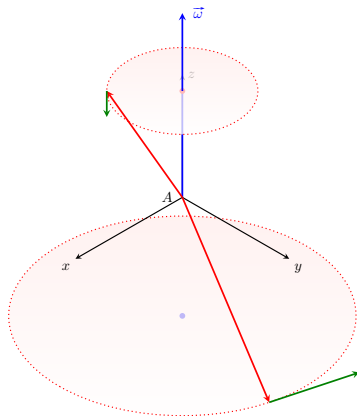
Animate with multimedia's \animate (II/III)



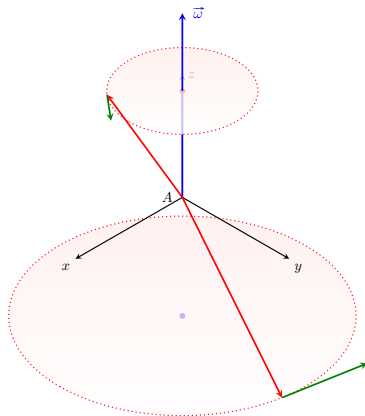
Animate with multimedia's \animate (II/III)



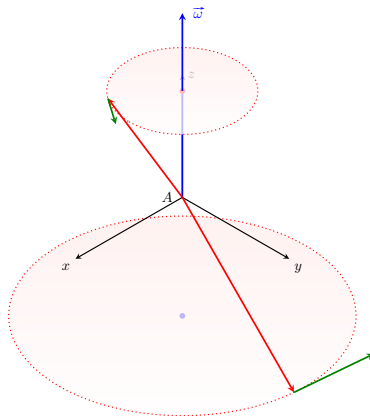
Animate with multimedia's \animate (II/III)



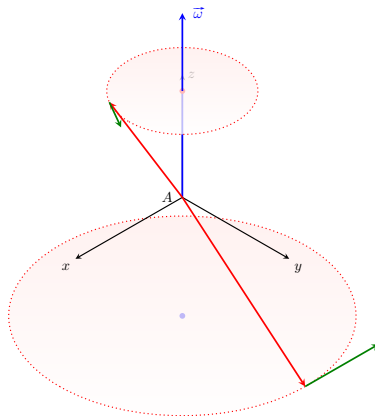
Animate with multimedia's \animate (II/III)



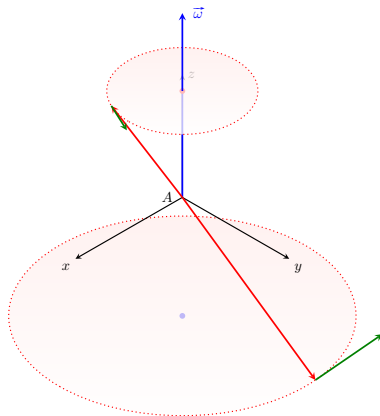
Animate with multimedia's \animate (II/III)



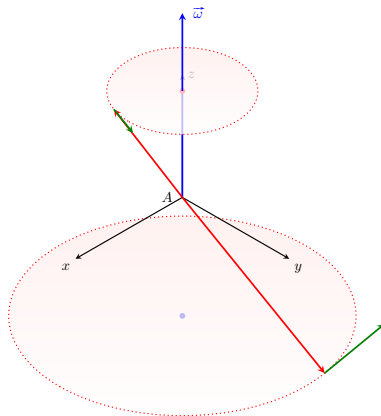
Animate with multimedia's \animate (II/III)



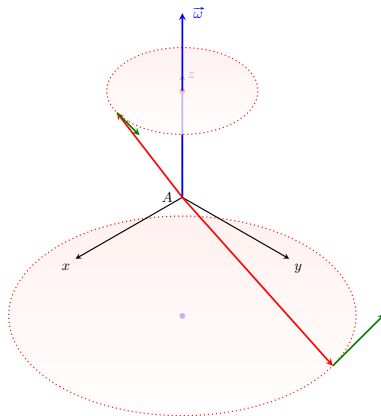
Animate with multimedia's \animate (II/III)



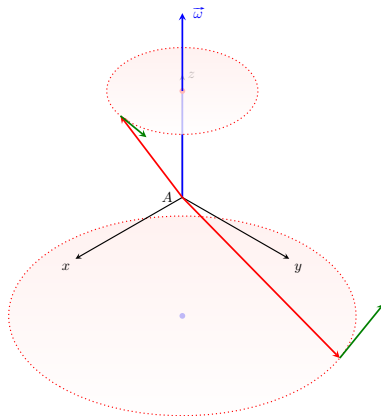
Animate with multimedia's \animate (II/III)



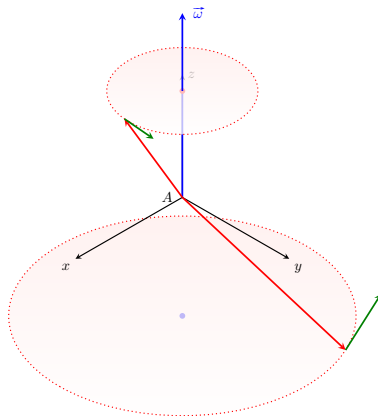
Animate with multimedia's \animate (II/III)



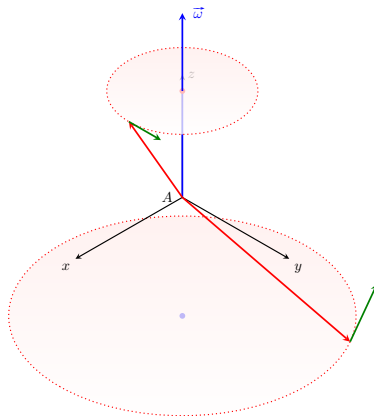
Animate with multimedia's \animate (II/III)



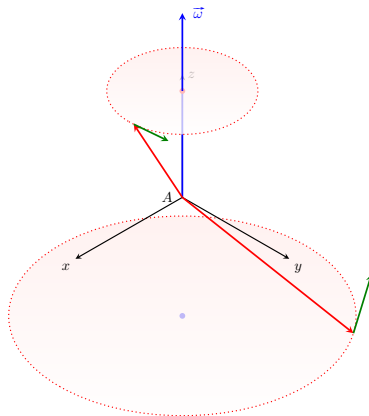
Animate with multimedia's \animate (II/III)



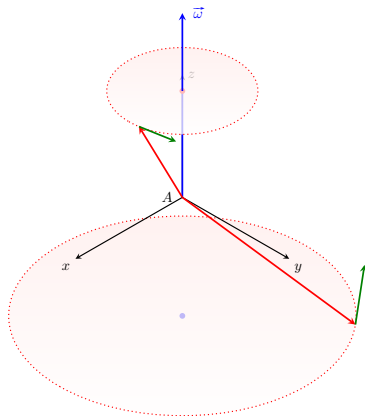
Animate with multimedia's \animate (II/III)



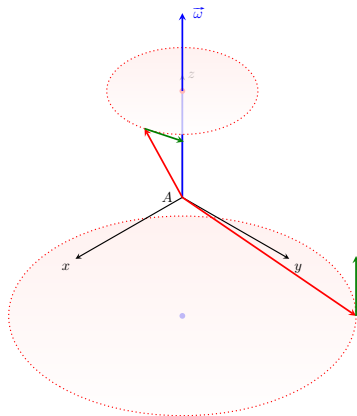
Animate with multimedia's \animate (II/III)



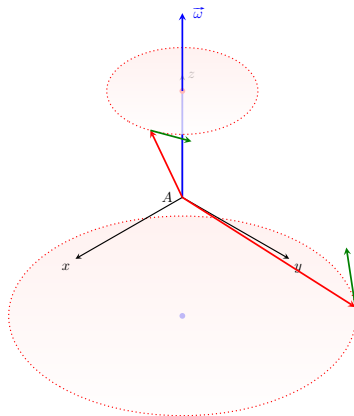
Animate with multimedia's \animate (II/III)



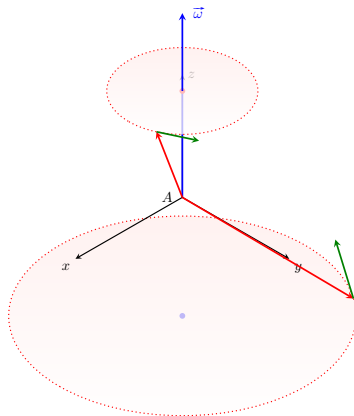
Animate with multimedia's \animate (II/III)



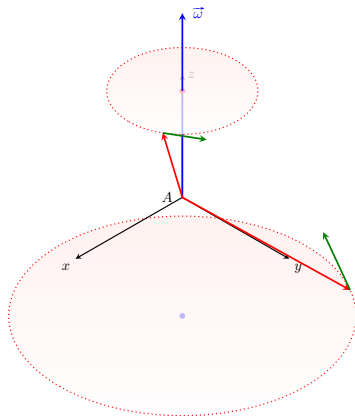
Animate with multimedia's \animate (II/III)



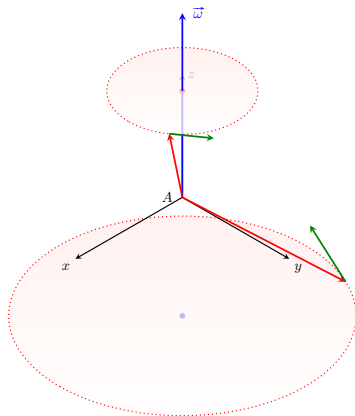
Animate with multimedia's \animate (II/III)



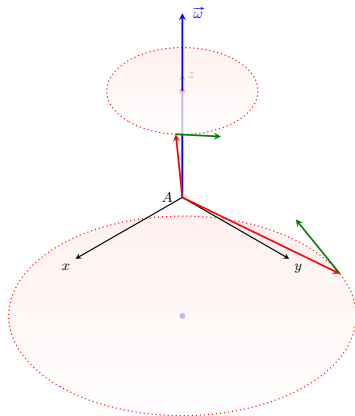
Animate with multimedia's \animate (II/III)



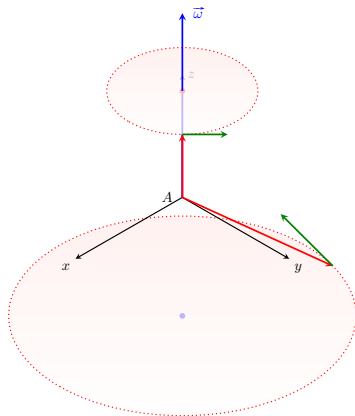
Animate with multimedia's \animate (II/III)



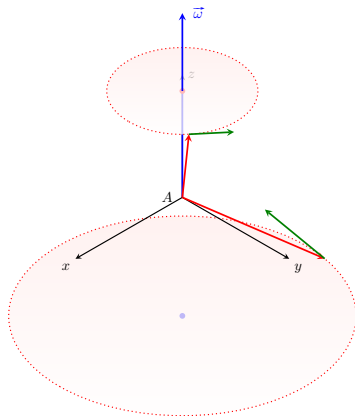
Animate with multimedia's \animate (II/III)



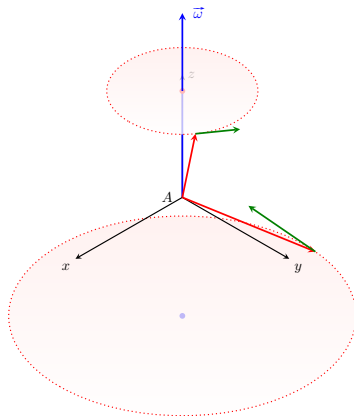
Animate with multimedia's \animate (II/III)



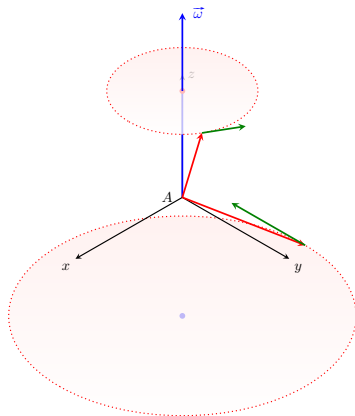
Animate with multimedia's \animate (II/III)



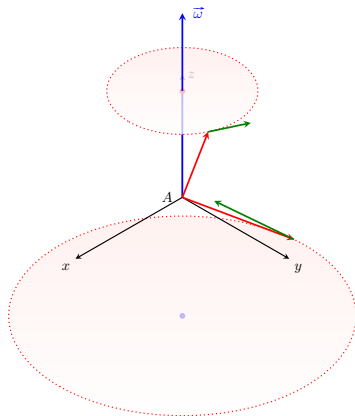
Animate with multimedia's \animate (II/III)



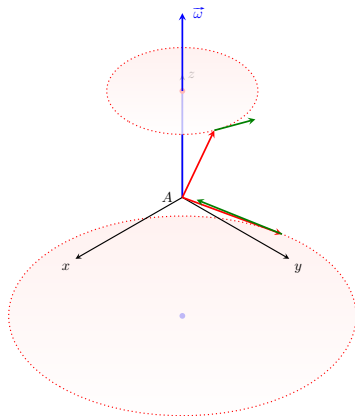
Animate with multimedia's \animate (II/III)



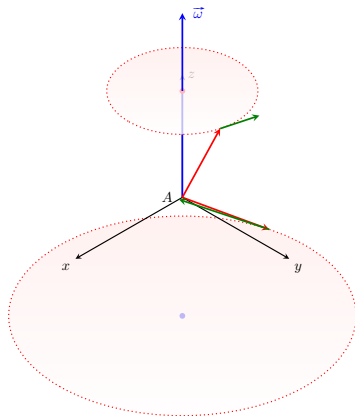
Animate with multimedia's \animate (II/III)



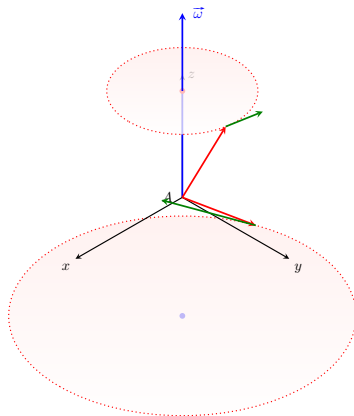
Animate with multimedia's \animate (II/III)



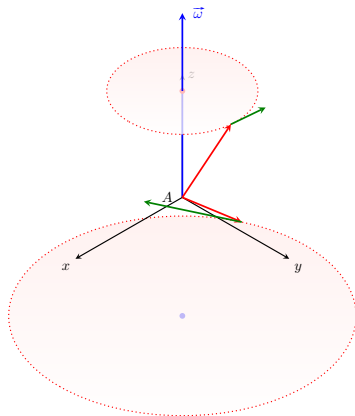
Animate with multimedia's \animate (II/III)



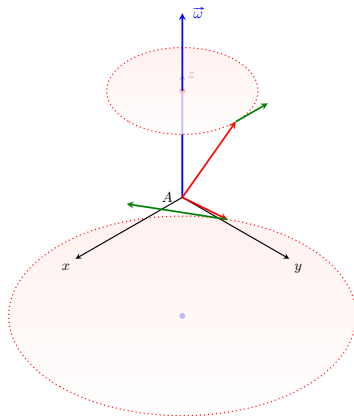
Animate with multimedia's \animate (II/III)



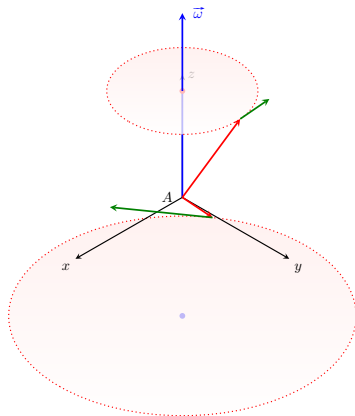
Animate with multimedia's \animate (II/III)



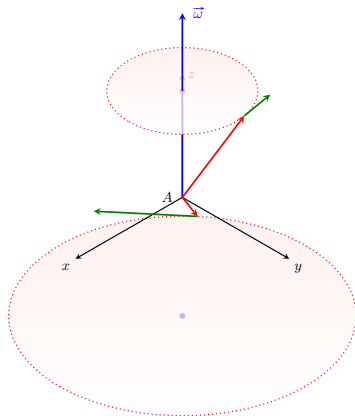
Animate with multimedia's \animate (II/III)



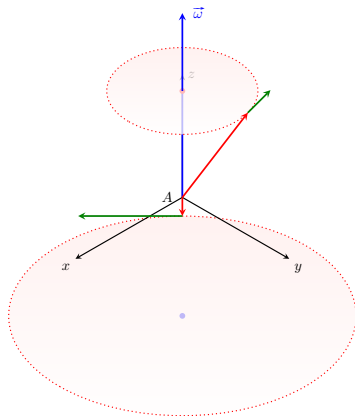
Animate with multimedia's \animate (II/III)



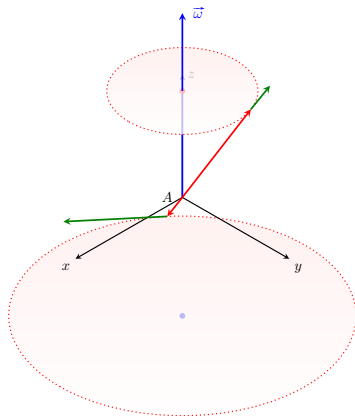
Animate with multimedia's \animate (II/III)



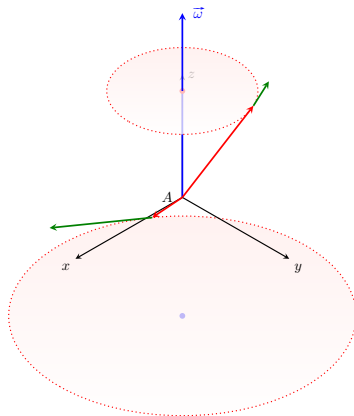
Animate with multimedia's \animate (II/III)



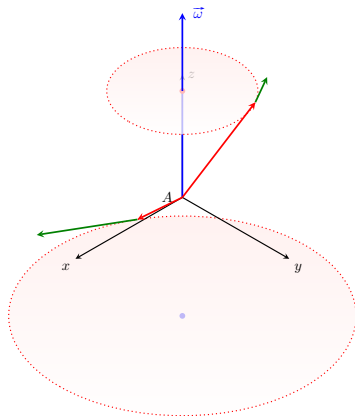
Animate with multimedia's \animate (II/III)



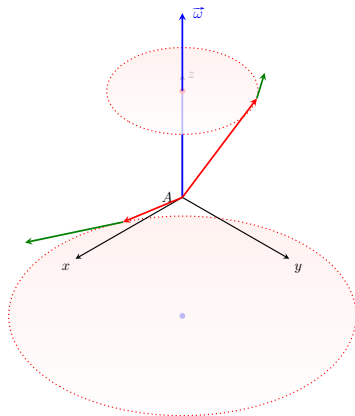
Animate with multimedia's \animate (II/III)



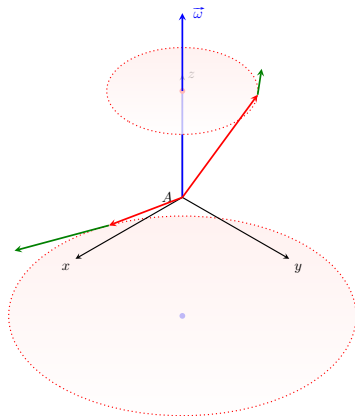
Animate with multimedia's \animate (II/III)



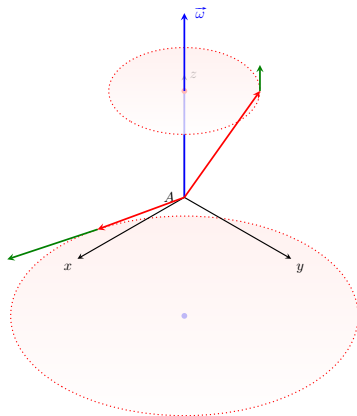
Animate with multimedia's \animate (II/III)



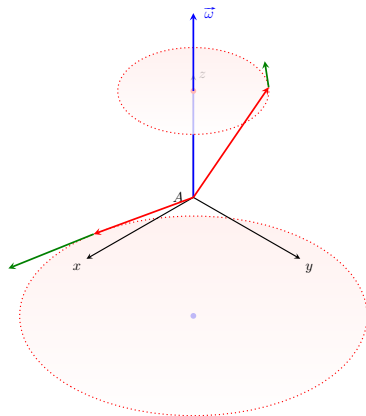
Animate with multimedia's \animate (II/III)



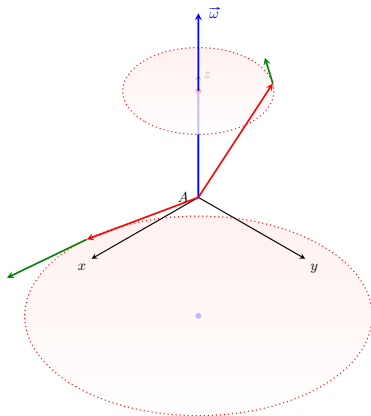
Animate with multimedia's \animate (II/III)



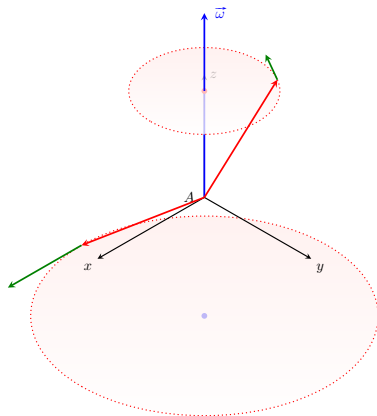
Animate with multimedia's \animate (II/III)



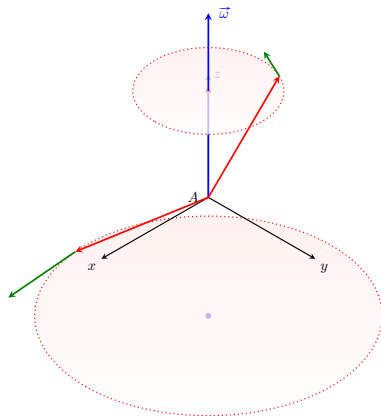
Animate with multimedia's \animate (II/III)



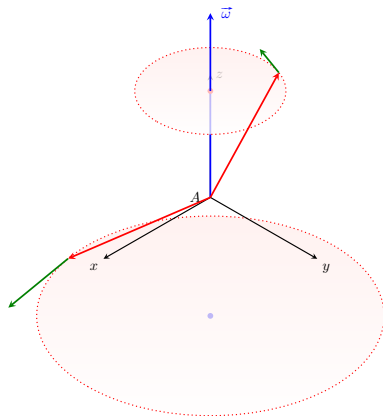
Animate with multimedia's \animate (II/III)



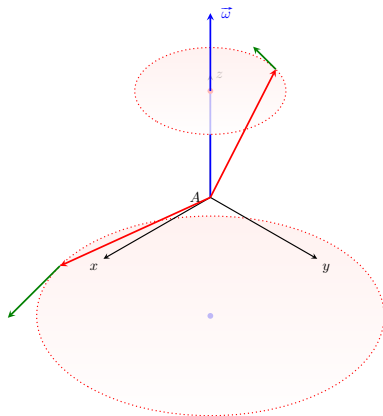
Animate with multimedia's \animate (II/III)



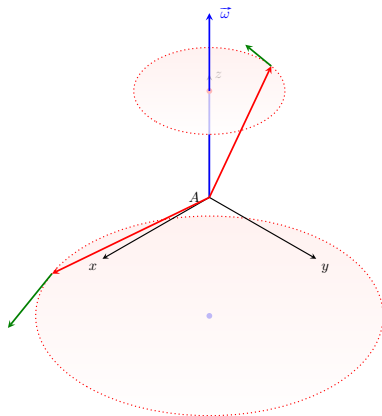
Animate with multimedia's \animate (II/III)



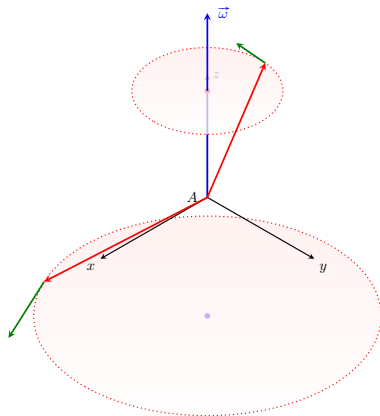
Animate with multimedia's \animate (II/III)



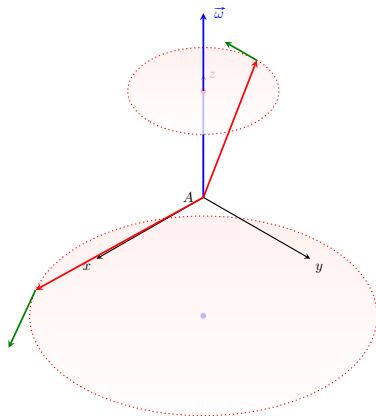
Animate with multimedia's \animate (II/III)



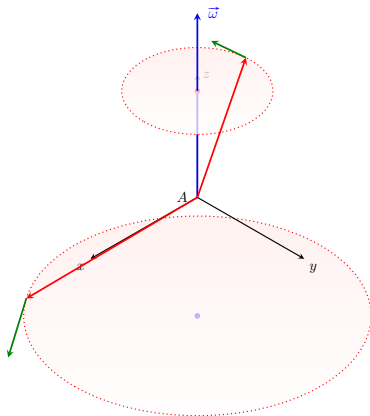
Animate with multimedia's \animate (II/III)



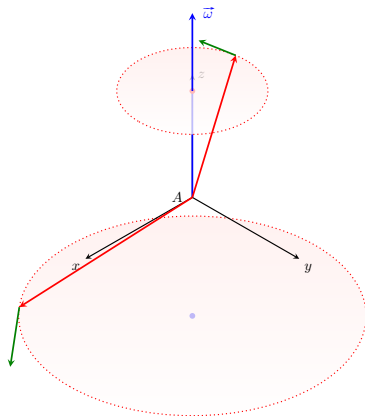
Animate with multimedia's \animate (II/III)



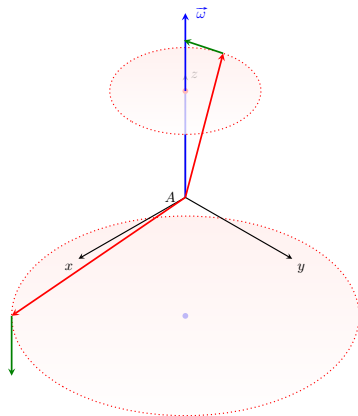
Animate with multimedia's \animate (II/III)



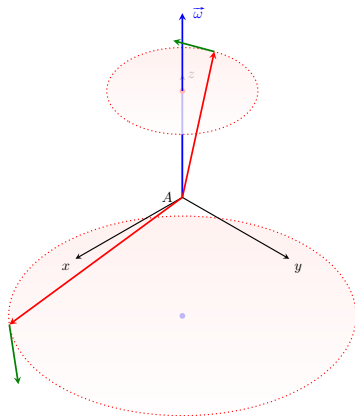
Animate with multimedia's \animate (II/III)



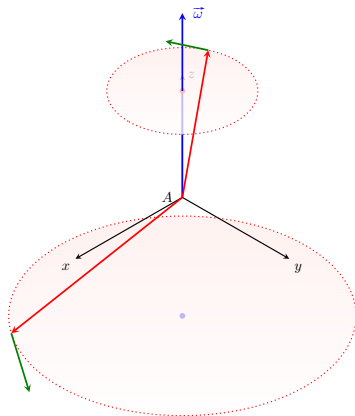
Animate with multimedia's \animate (II/III)



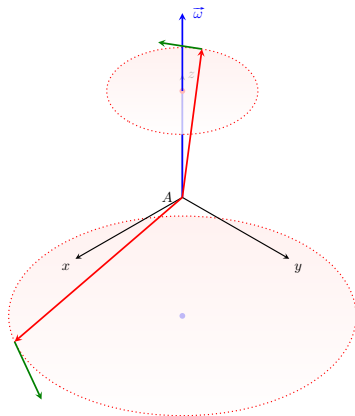
Animate with multimedia's \animate (II/III)



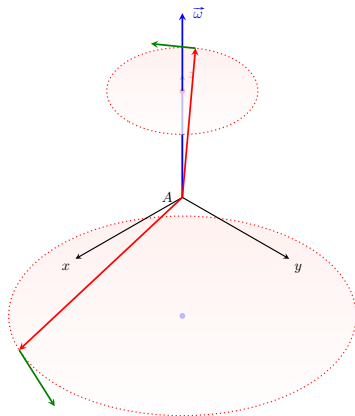
Animate with multimedia's \animate (II/III)



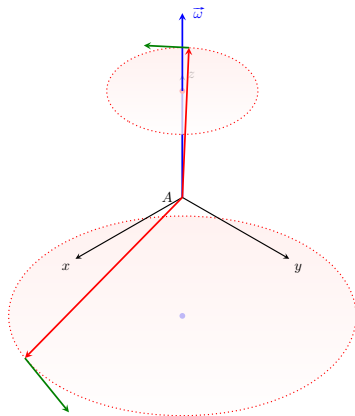
Animate with multimedia's \animate (II/III)



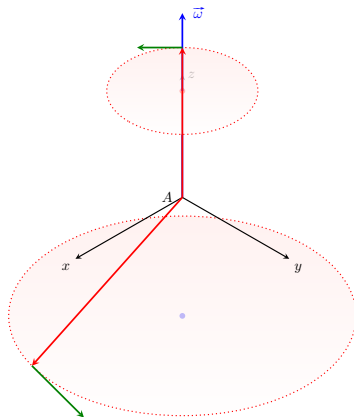
Animate with multimedia's \animate (II/III)



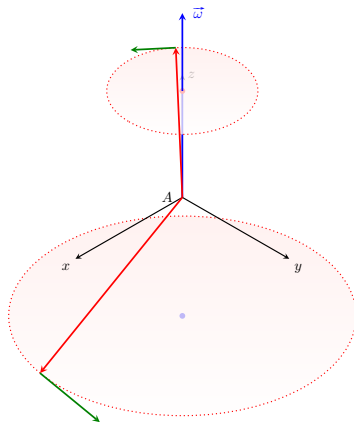
Animate with multimedia's \animate (II/III)



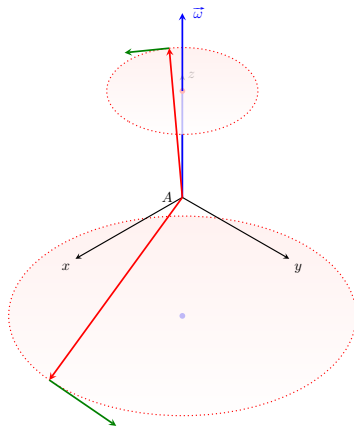
Animate with multimedia's \animate (II/III)



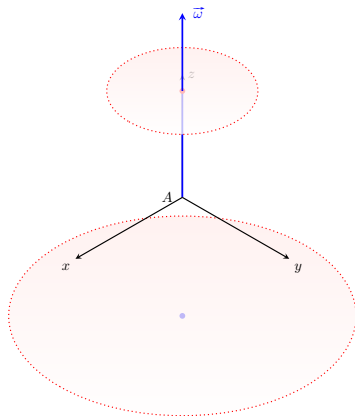
Animate with multimedia's \animate (II/III)



Animate with multimedia's \animate (II/III)

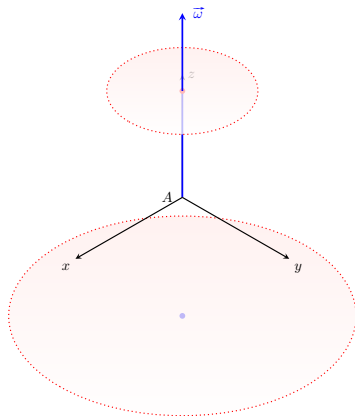


Animate with multimedia's \animate (II/III)



Animation is played too fast!

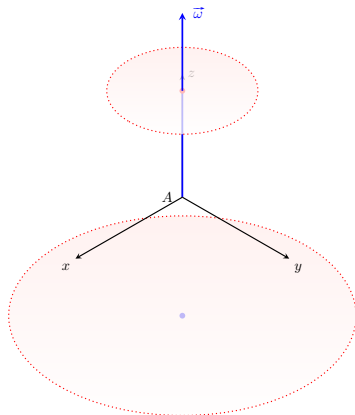
Animate with multimedia's \animate (II/III)



Animation is played too fast!

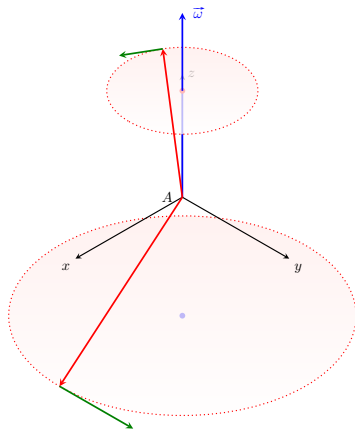
Animate with multimedia's \transduration (III/III)

Replace `\animate<2-73>` on line 4 by `\transduration<2-73>\{0.2\}`
 (0.2 is the frame duration in seconds)



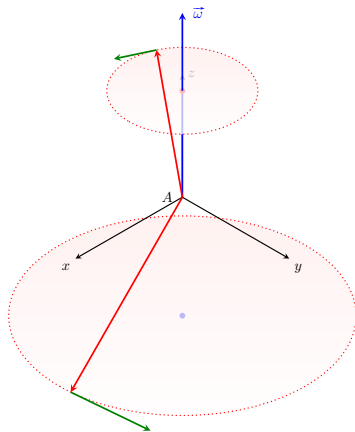
Animate with multimedia's \transduration (III/III)

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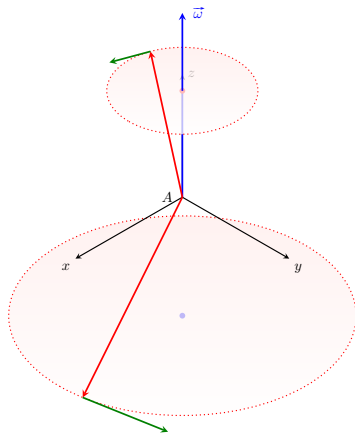
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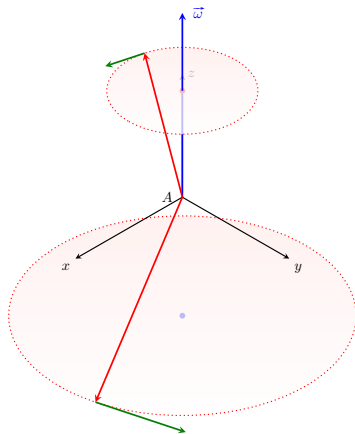
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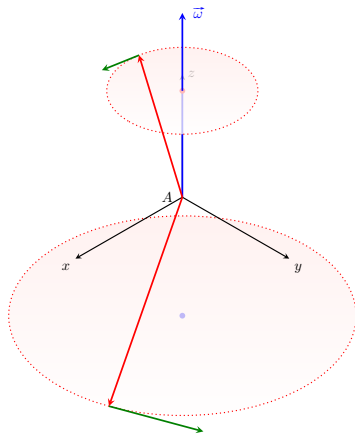
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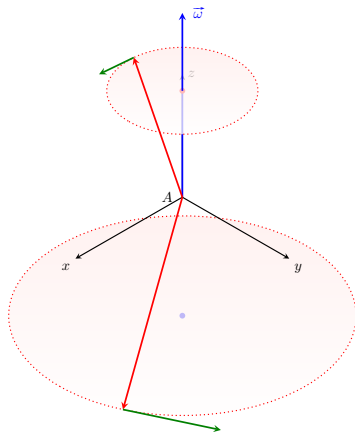
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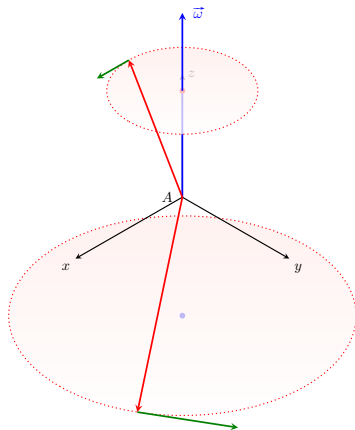
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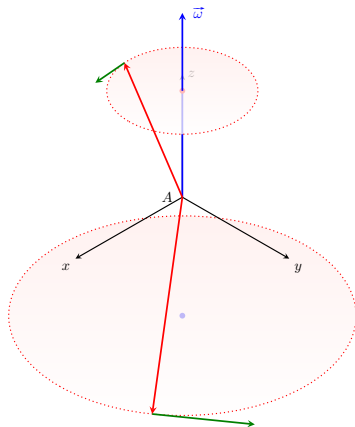
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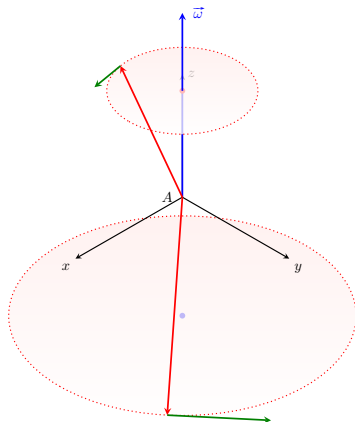
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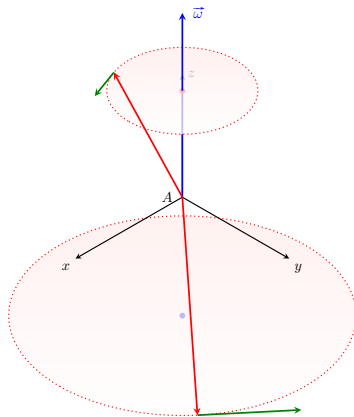
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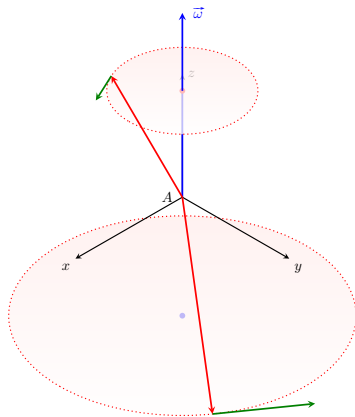
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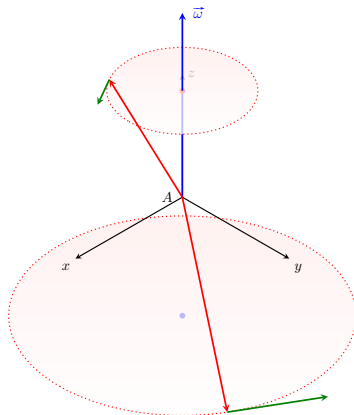
Animate with multimedia's \transduration (III/III)

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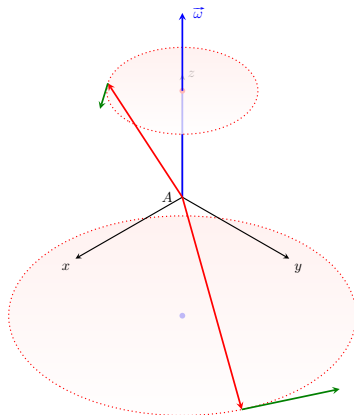
Animate with multimedia's \transduration (III/III)

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 (0.2 is the frame duration in seconds)



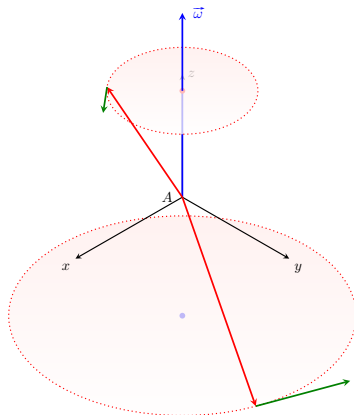
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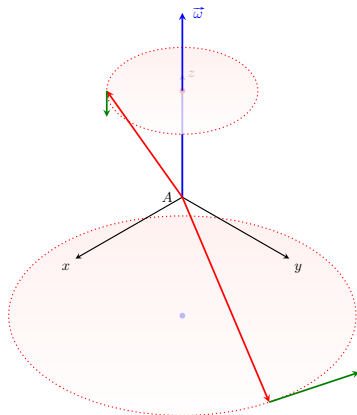
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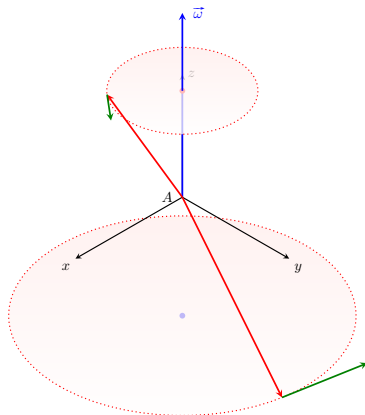
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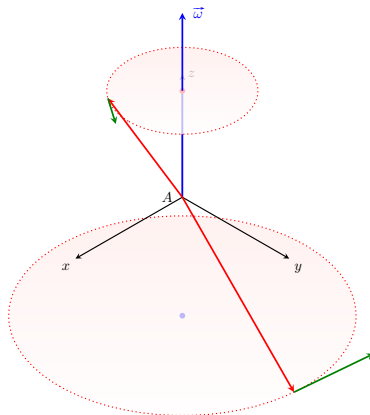
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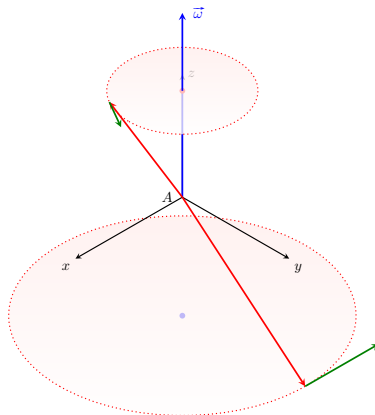
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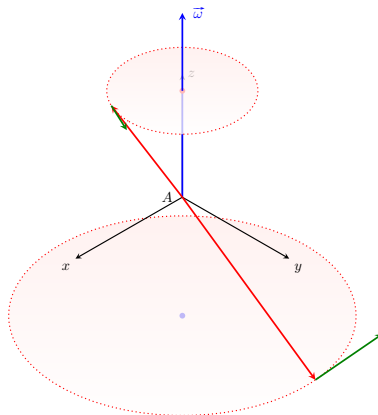
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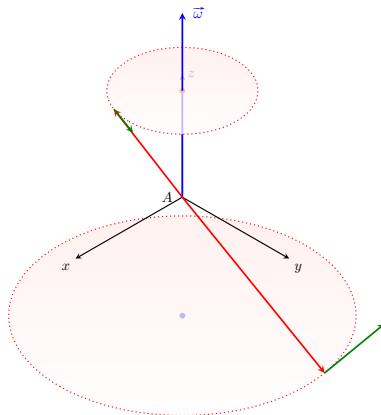
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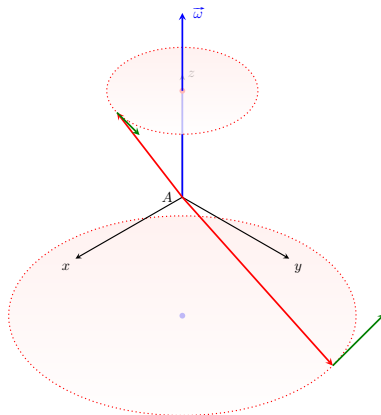
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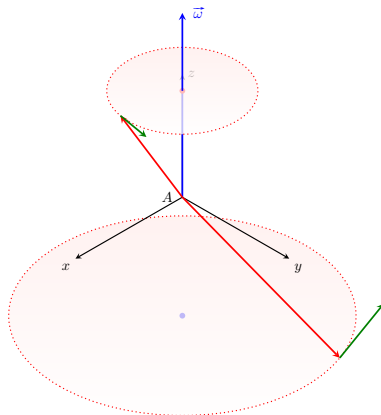
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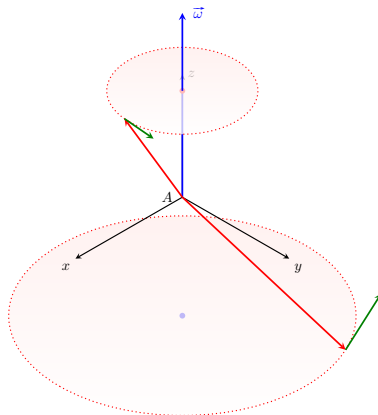
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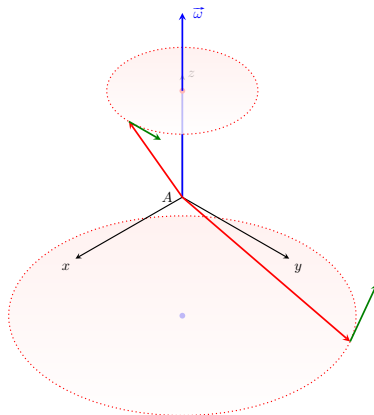
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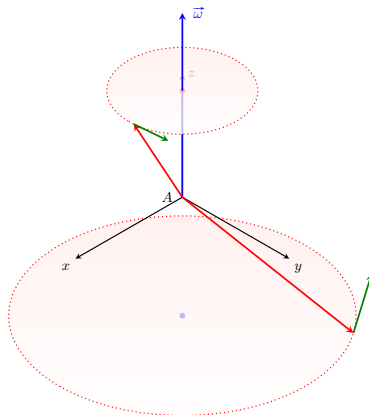
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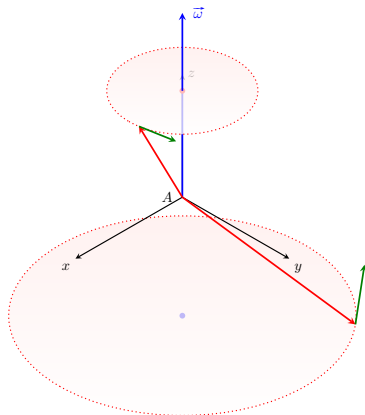
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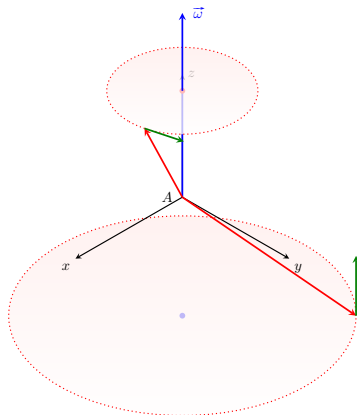
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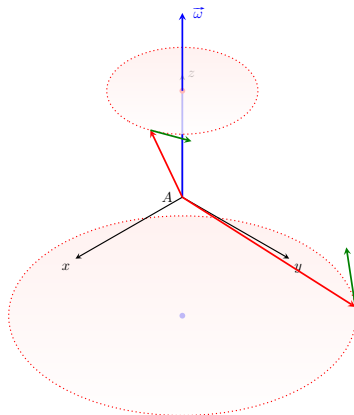
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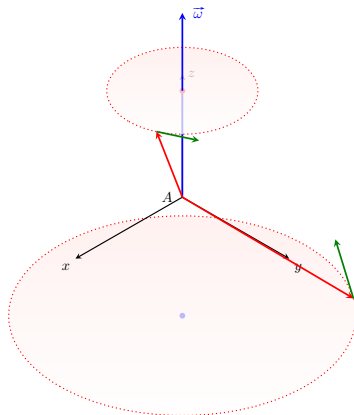
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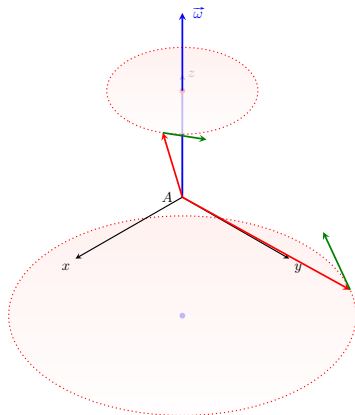
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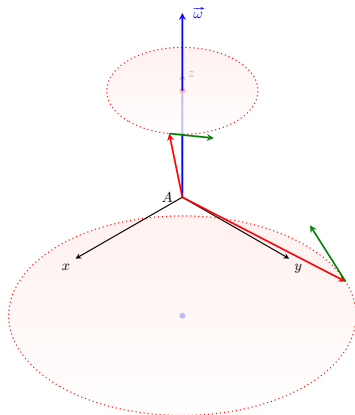
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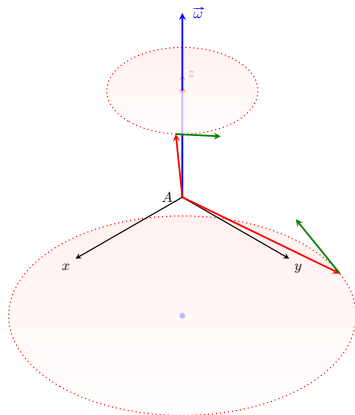
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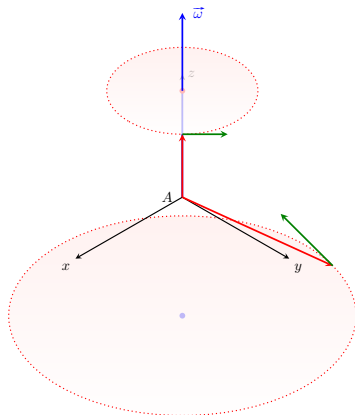
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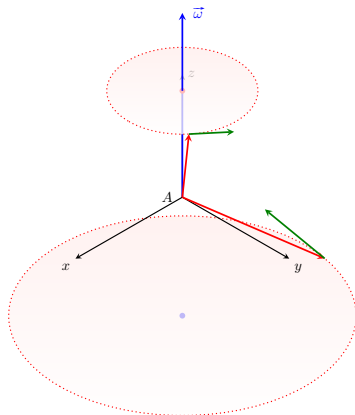
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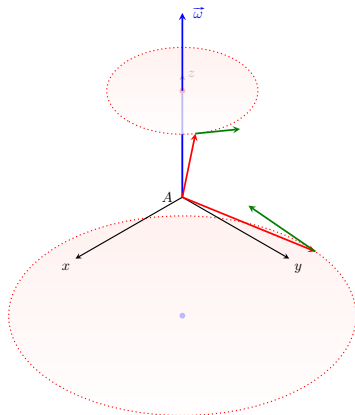
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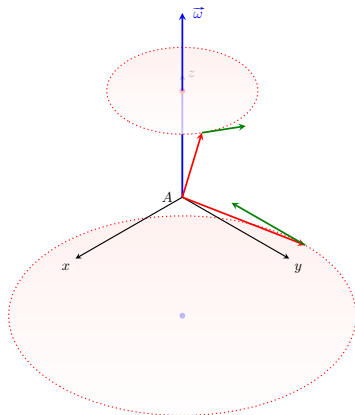
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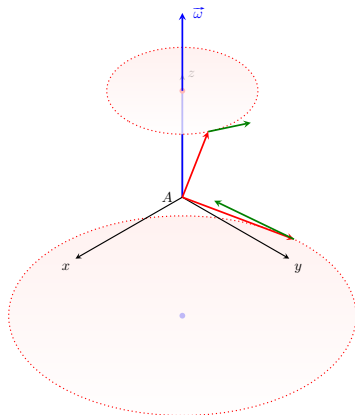
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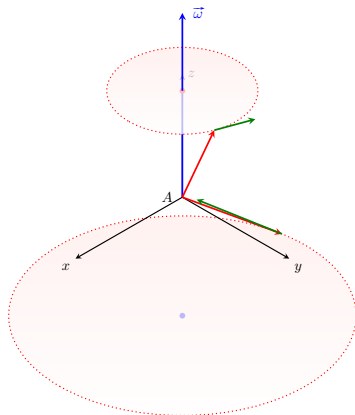
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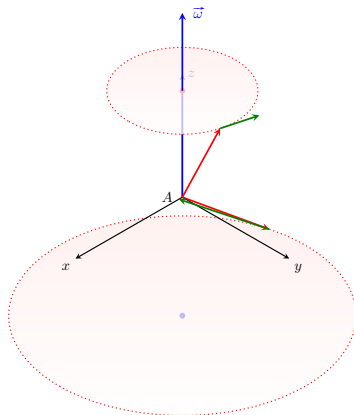
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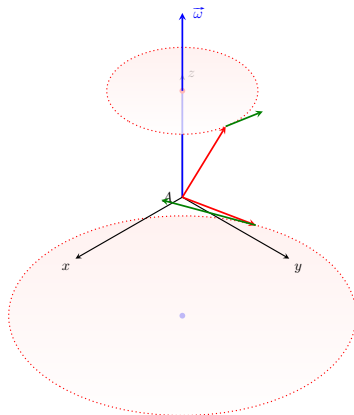
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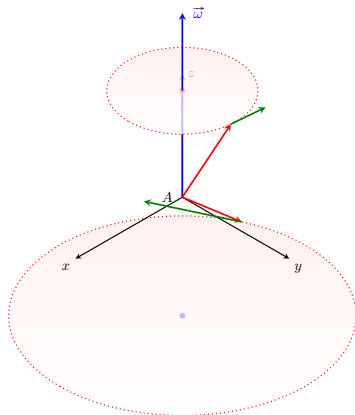
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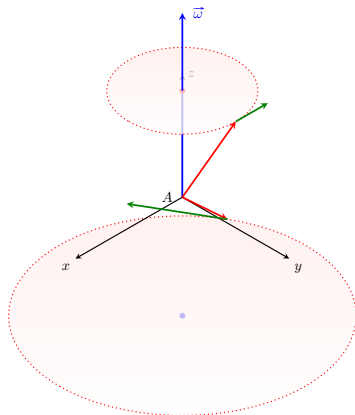
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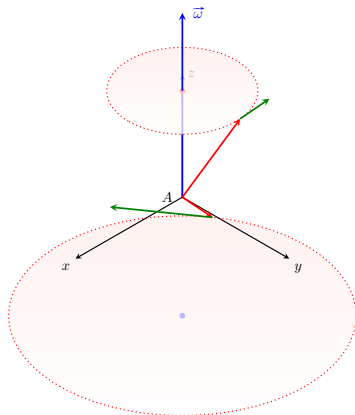
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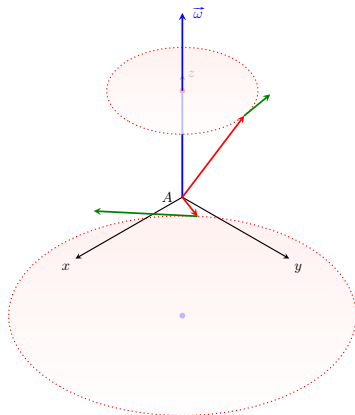
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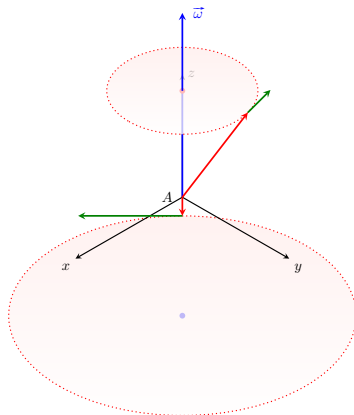
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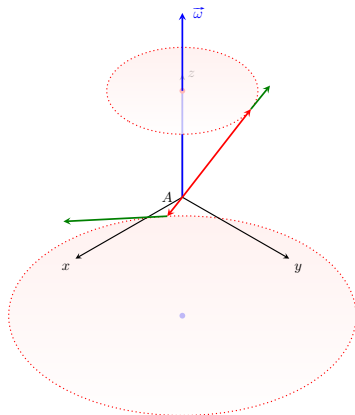
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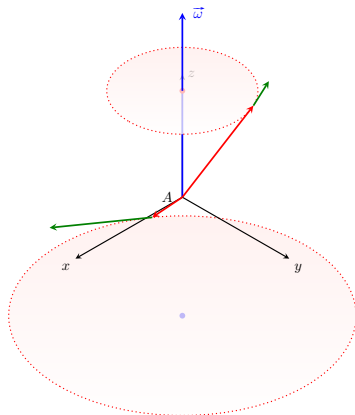
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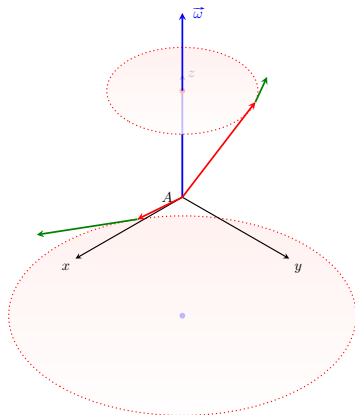
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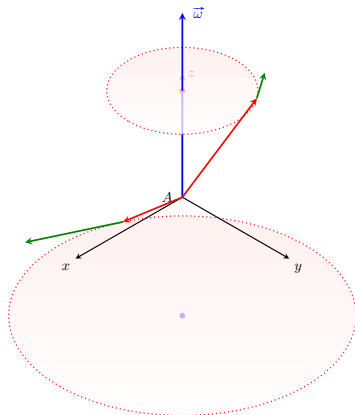
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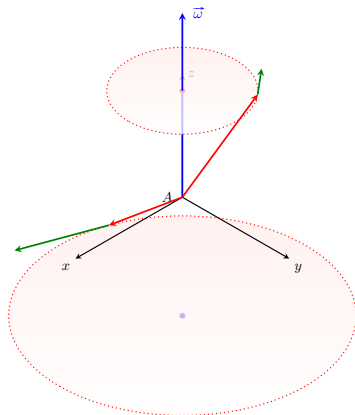
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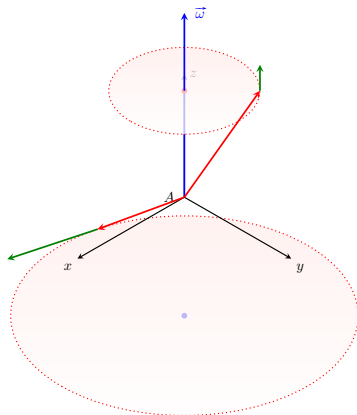
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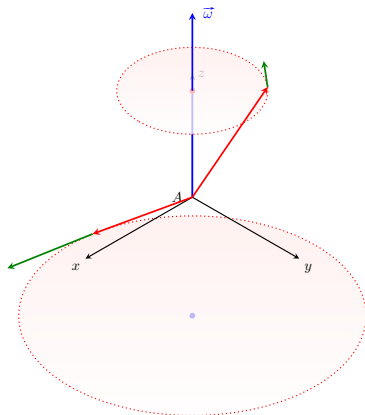
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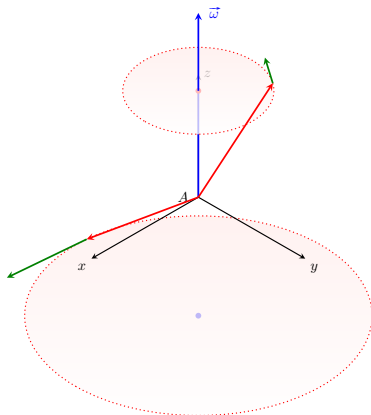
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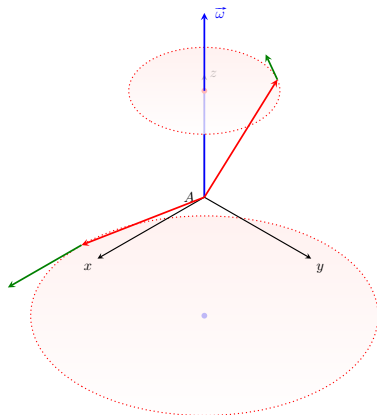
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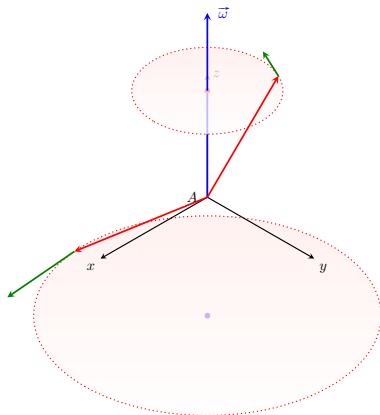
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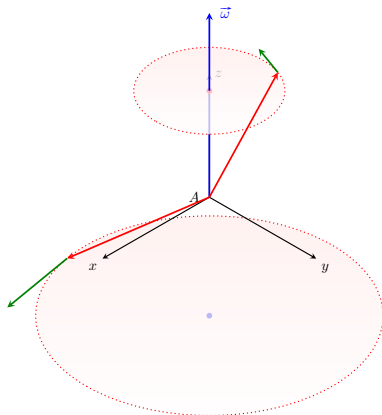
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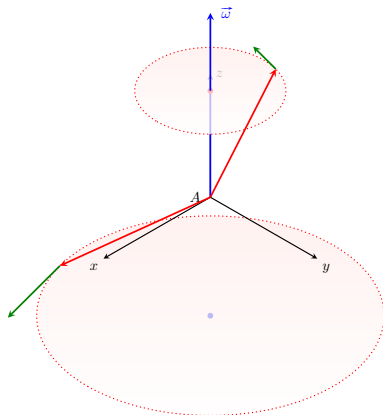
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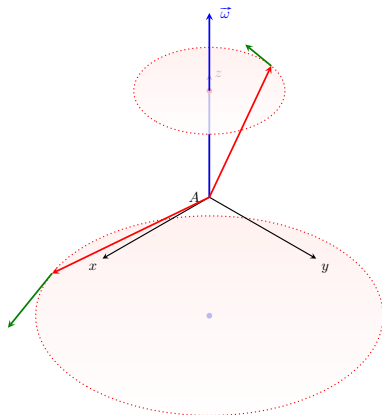
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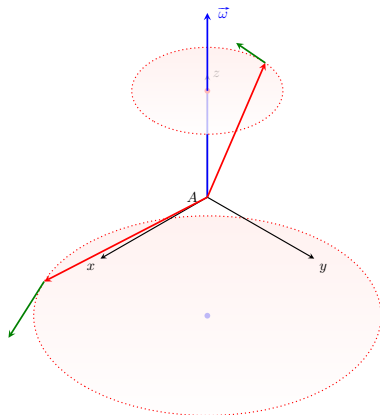
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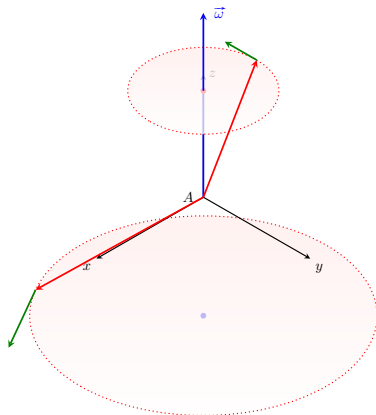
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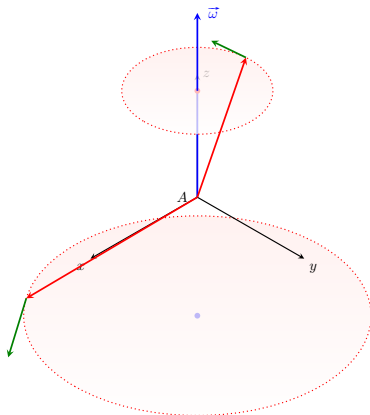
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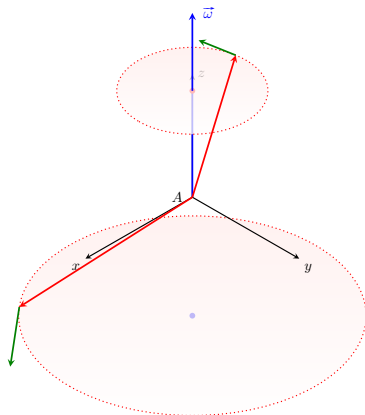
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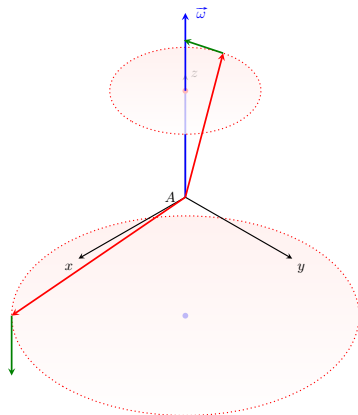
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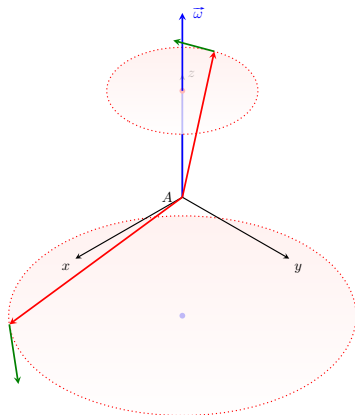
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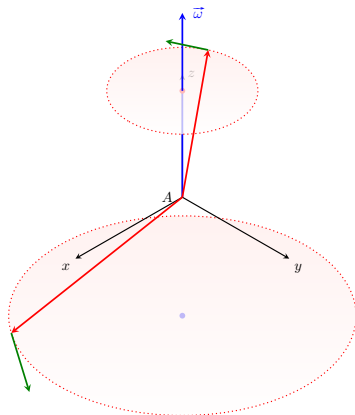
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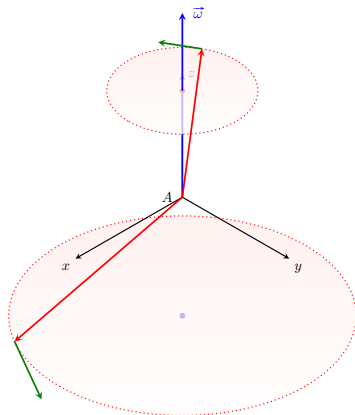
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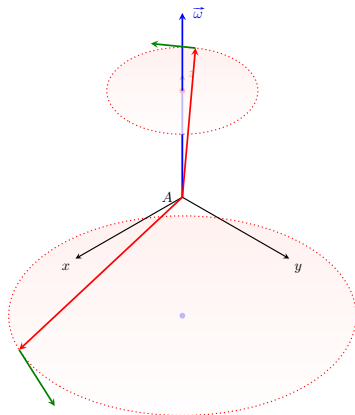
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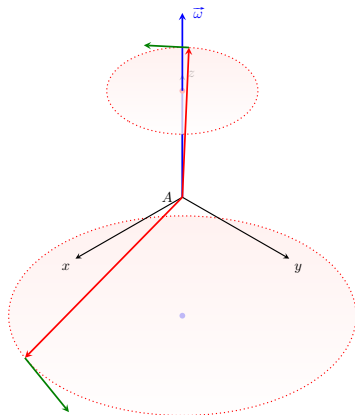
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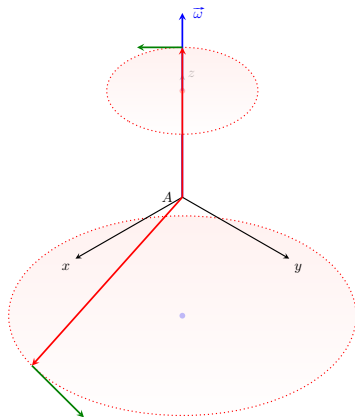
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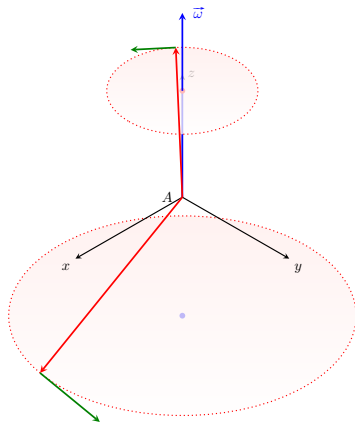
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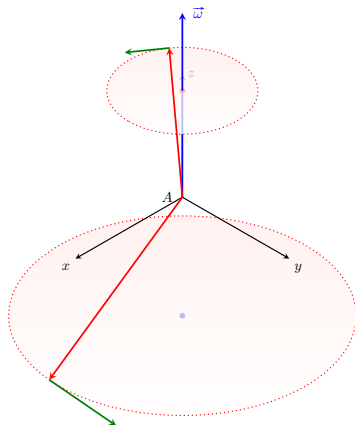
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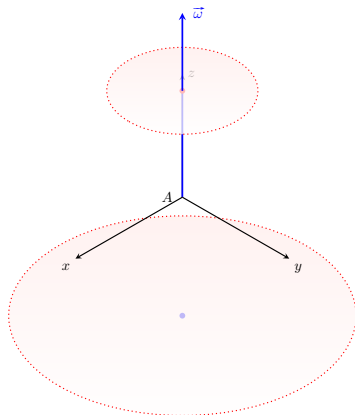
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Much better!

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- Examples
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Examples of animation and multimedia

- Animation with multimedia package
- **Animation with animate package**
- Movies with multimedia or embedvideo packages

With animate's `\animategraphics`

The package `animate` is much more powerful ! Two simple uses:

① Multipage PDF

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- Put this code in a centered `minipage` (20 is the fps):

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{20}{rot-sol}{}{}
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② Separated Images, named as `<basename><start>.ext` to

`<basename><end>.ext`, where `<ext>` is the extension (pdf, jpg, png), and `<start>` & `<end>` are the corresponding numbers (e.g. 00 & 73).

In the code above, provide them as the two last parameters:

```
\animategraphics[<options>]{<fps>}{<basename>}{<start>}{<end>}
```

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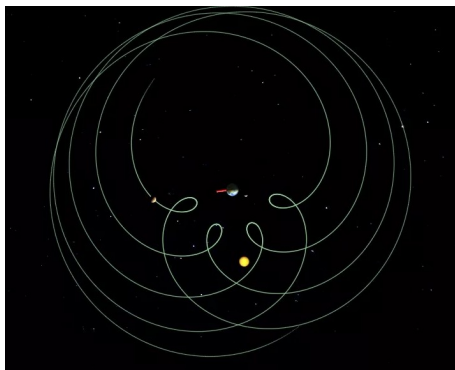
Examples of animation and multimedia

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Movie with multimedia's \movie

Embedding video with `multimedia` does compile, but playing doesn't work.
The solution is to launch an external program with the option `externalviewer`.
(for me, `C:/Progra 1/VideoLAN/VLC/vlc.exe`)

```
1 \movie[externalviewer]%  
2 {\includegraphics[width=0.5\linewidth]{RetrogradationMars.jpg}}%  
3 {RetrogradationMars.mp4}
```



Movie with embedvideo package

Using `embedvideo` package like this :

```
1 \embedvideo%  
2 {\includegraphics[width=0.5\linewidth]{RetrogradationMars.jpg}}%  
3 {RetrogradationMars.mp4}
```

