

# Лабораторная работа №7

Презентации в LaTeX – класс beamer

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04 декабря 2025

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## Цель работы

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## Основная цель

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Изучить приёмы создания презентаций в LaTeX с использованием класса **beamer**, включая:

- структуру слайдов;
- работу с блоками (`block`, `exampleblock`);
- пошаговое раскрытие элементов с `\pause`;
- точное управление отображением через `\uncover`;
- изменение тем и цветовых схем.

## Подготовка файлов

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## Файлы примеров

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В рабочей директории размещены файлы:

- `beamer_basic.tex`
- `beamer_blocks.tex`
- `beamer_pauses.tex`
- `beamer_uncover.tex`
- `beamer_layout.tex`

```
PS C:\Users\sidra\Desktop> start natbib_example.pdf
PS C:\Users\sidra\Desktop> start biblatex_example.pdf
PS C:\Users\sidra\Desktop> start biblatex_numeric.pdf
PS C:\Users\sidra\Desktop> notepad beamer_basic.tex
PS C:\Users\sidra\Desktop> notepad beamer_blocks.tex
PS C:\Users\sidra\Desktop> notepad beamer_pauses.tex
PS C:\Users\sidra\Desktop> notepad beamer_uncover.tex
PS C:\Users\sidra\Desktop> notepad beamer_layout.tex
PS C:\Users\sidra\Desktop>
```

Рис. 1: Открытие файлов

## Компиляция примеров

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Первая компиляция:

- отсутствует файл `.nav`;
- предупреждение `rerunfilecheck`.

Результат: 3-страничная презентация.

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-basic-dictionary-En
glish.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-bibliography-dictio
nary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-environment-diction
ary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-months-dictionary-E
nglish.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-numbers-dictionary-
English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-
English.dict)
No file beamer_basic.nav.

[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
[2]
[3] (./beamer_basic.aux)

Package rerunfilecheck Warning: File 'beamer_basic.out' has changed.
(rerunfilecheck)               Rerun to get outlines right
(rerunfilecheck)               or use package 'bookmark'.

) <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb> <c:/tex
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb> <c:/texlive/2025
/texmf-dist/fonts/type1/public/amsfonts/cm/cmss8.pfb>
Output written on beamer_basic.pdf (3 pages, 36691 bytes).
Transcript written on beamer_basic.log.
```

# beamer\_blocks.tex

Файл демонстрирует работу блоков.

```
PS C:\Users\sidra\Desktop> pdflatex beamer_blocks.tex
This is pdfTeX, Version 3.141592653-2.6-1.40.28 (TeX Live 2025) (preloaded format=pdflatex)
  restricted \writel18 enabled.
entering extended mode
./beamer_blocks.tex
LaTeX2e <2025-06-01> patch level 1
L3 programming layer <2025-09-02>
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamer.cls
Document Class: beamer 2025/08/13 v3.76 A class for typesetting presentations
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasemodes.sty
(c:/texlive/2025/texmf-dist/tex/latex/etoolbox/etoolbox.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasedecode.sty))
(c:/texlive/2025/texmf-dist/tex/generic/iftex/iftex.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbaseoptions.sty
(c:/texlive/2025/texmf-dist/tex/latex/graphics/keyval.sty))
(c:/texlive/2025/texmf-dist/tex/latex/geometry/geometry.sty
(c:/texlive/2025/texmf-dist/tex/generic/iftex/ifvtex.sty))
(c:/texlive/2025/texmf-dist/tex/latex/pgf/math/pgfmath.sty
(c:/texlive/2025/texmf-dist/tex/latex/pgf/utilities/pgfrcs.sty
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-common.tex)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-latex.def)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfrcs.code.tex
```

Рис. 3: Компиляция blocks

Результат:

- предупреждение о повторной компиляции,
- создан **1-страничный PDF**.

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-bibliography-dictio
nary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-environment-diction
ary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-months-dictionary-E
nglish.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-numbers-dictionary-
English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-
English.dict)
No file beamer_blocks.nav.

[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
./beamer_blocks.aux

Package rerunfilecheck Warning: File 'beamer_blocks.out' has changed.
(rerunfilecheck)                  Rerun to get outlines right
(rerunfilecheck)                  or use package 'bookmark'.

)<c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/tex
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb>
Output written on beamer_blocks.pdf (1 page, 23184 bytes).
Transcript written on beamer_blocks.log.
```

Рис. 4: Завершение blocks

Пример с \pause:

```
PS C:\Users\sidra\Desktop> pdflatex beamer_pauses.tex
This is pdfTeX, Version 3.141592653-2.6-1.40.28 (TeX Live 2025) (preloaded format=pdflatex)
  restricted \write18 enabled.
entering extended mode
./beamer_pauses.tex
LaTeX2e <2025-06-01> patch level 1
L3 programming layer <2025-09-02>
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamer.cls
Document Class: beamer 2025/08/13 v3.76 A class for typesetting presentations
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasemodes.sty
(c:/texlive/2025/texmf-dist/tex/latex/etoolbox/etoolbox.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasedecode.sty))
(c:/texlive/2025/texmf-dist/tex/latex/generic/iftex/iftex.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbaseoptions.sty
(c:/texlive/2025/texmf-dist/tex/latex/graphics/keyval.sty)
(c:/texlive/2025/texmf-dist/tex/latex/geometry/geometry.sty
(c:/texlive/2025/texmf-dist/tex/generic/iftex/ifvtex.sty))
(c:/texlive/2025/texmf-dist/tex/latex/pgf/math/pgfmath.sty
(c:/texlive/2025/texmf-dist/tex/latex/pgf/utilities/pgfrcs.sty
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-common.tex)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfutil-latex.def)
(c:/texlive/2025/texmf-dist/tex/generic/pgf/utilities/pgfrcs.code.tex
(c:/texlive/2025/texmf-dist/tex/generic/pgf/pgf.revision.tex)))
(c:/texlive/2025/texmf-dist/tex/latex/pgf/utilities/pgfkeys.sty
```

Рис. 5: Компиляция pauses

Результат: 5 страниц, соответствующие числу появлений объектов.

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-
English.dict)
No file beamer_pauses.nav.

[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
[2]
[3]
[4]
[5] (./beamer_pauses.aux)

Package rerunfilecheck Warning: File 'beamer_pauses.out' has changed.
(rerunfilecheck)               Rerun to get outlines right
(rerunfilecheck)               or use package 'bookmark'.

 )<c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/tex
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb><c:/texlive/2025
/texmf-dist/fonts/type1/public/amsfonts/cm/cmss8.pfb>
Output written on beamer_pauses.pdf (5 pages, 37984 bytes).
Transcript written on beamer_pauses.log.
```

Рис. 6: Завершение pauses

## Использование \uncover<n->:

```
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-bibliography-dictio
nary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-environment-diction
ary-English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-months-dictionary-E
nglish.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-numbers-dictionary-
English.dict)
(c:/texlive/2025/texmf-dist/tex/latex/translator/translator-theorem-dictionary-
English.dict)
No file beamer_uncover.nav.
(c:/texlive/2025/texmf-dist/tex/latex/amsfonts/umsa.fd)
(c:/texlive/2025/texmf-dist/tex/latex/amsfonts/umsb.fd)
[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
[2]
[3]
[4] (./beamer_uncover.aux)

Package rerunfilecheck Warning: File 'beamer_uncover.out' has changed.
(rerunfilecheck)           Rerun to get outlines right
(rerunfilecheck)           or use package 'bookmark'.

)<c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmmi10.pfb><c:/tex
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb><c:/texlive/2025
/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb><c:/texlive/2025/texmf-di
st/fonts/type1/public/amsfonts/cm/cmssi10.pfb><c:/texlive/2025/texmf-dist/fonts
/type1/public/amsfonts/cm/cmsy10.pfb>
Output written on beamer_uncover.pdf (4 pages, 51953 bytes).
```

Рис. 7: Компиляция uncover

Результат: 4 шага раскрытия.

Пример изменения темы и цветовой схемы.

```
PS C:\Users\sidra\Desktop> pdflatex beamer_layout.tex
This is pdfTeX, Version 3.141592653-2.6-1.40.28 (TeX Live 2025) (preloaded format=pdflatex)
  restricted \write18 enabled.
entering extended mode
./beamer_layout.tex
LaTeX2e <2025-06-01> patch level 1
L3 programming layer <2025-09-02>
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamer.cls
Document Class: beamer 2025/08/13 v3.76 A class for typesetting presentations
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasemodes.sty
(c:/texlive/2025/texmf-dist/tex/latex/etoolbox/etoolbox.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbasedecode.sty))
(c:/texlive/2025/texmf-dist/tex/generic/iftex/iftex.sty)
(c:/texlive/2025/texmf-dist/tex/latex/beamer/beamerbaseoptions.sty
(c:/texlive/2025/texmf-dist/tex/latex/graphics/keyval.sty)
(c:/texlive/2025/texmf-dist/tex/latex/geometry/geometry.sty
(c:/texlive/2025/texmf-dist/tex/generic/iftex/ifvtex.sty))
```

Рис. 8: Компиляция layout

И финальное открытие всех PDF:

```
[1{c:/texlive/2025/texmf-var/fonts/map/pdftex/updmap/pdftex.map}]
[2] (./beamer_layout.aux)

Package rerunfilecheck Warning: File `beamer_layout.out' has changed.
(rerunfilecheck)               Rerun to get outlines right
(rerunfilecheck)               or use package `bookmark'.

) <c:/texlive/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss10.pfb> <c:/tex
live/2025/texmf-dist/fonts/type1/public/amsfonts/cm/cmss12.pfb> <c:/texlive/2025
/texmf-dist/fonts/type1/public/amsfonts/cm/cmss8.pfb>
Output written on beamer_layout.pdf (2 pages, 38452 bytes).
Transcript written on beamer_layout.log.
PS C:\Users\sidra\Desktop> start beamer_basic.pdf
PS C:\Users\sidra\Desktop> start beamer_blocks.pdf
PS C:\Users\sidra\Desktop> start beamer_pauses.pdf
PS C:\Users\sidra\Desktop> start beamer_uncover.pdf
PS C:\Users\sidra\Desktop> start beamer_layout.pdf
PS C:\Users\sidra\Desktop>
```

Рис. 9: Открытые PDF

## Просмотр слайдов

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## A tale of two primes

Bert

November 20, 2025

### Article

Some text about the article.

## Mathematics

A helpful tool for mathematicians.

## Article

### Example

This is an example of a block.

### Euclid's theorem

This is a theorem.

This block has no header.

# Pause – пошаговое раскрытие

Article

Definition

This is a definition.

«»»»»»»»»»»»»»

Article

Definition

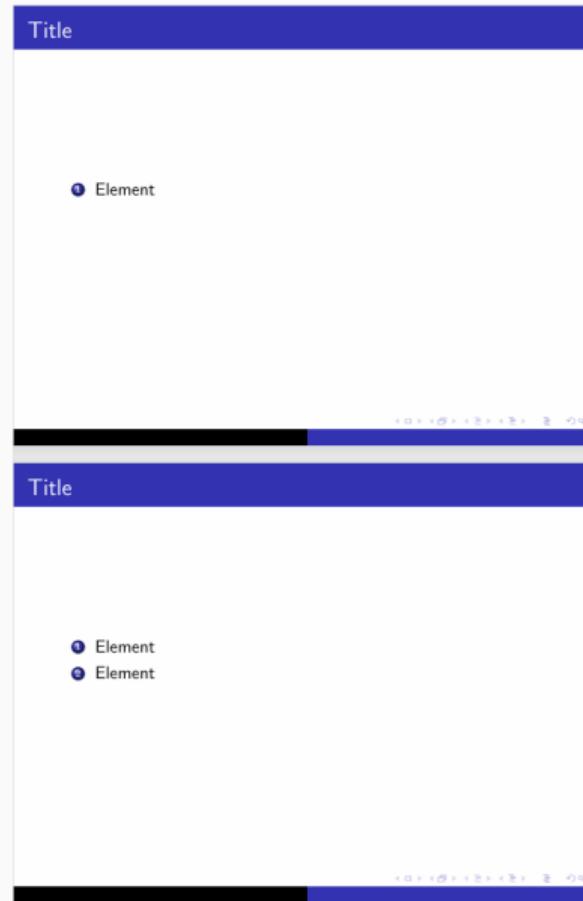
This is a definition.

Euclid's theorem

This is a theorem.

«»»»»»»»»»»»»»

# Pause – пошаговое раскрытие



## Title

- ➊ Element
- ➋ Element
- ➌ Element

## Uncover — точное управление

Sets

A **set** is a collection of objects.

Sets

A **set** is a collection of objects. For example:

$$Z = \{\text{cow, pig, elephant}\}.$$

# Uncover – точное управление

## Sets

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We call the objects in  $Z$  the **elements** of  $Z$ .

## Sets

A **set** is a collection of objects. For example:

$$Z = \{\text{cow, pig, elephant}\}.$$

We call the objects in  $Z$  the **elements** of  $Z$ . We write

$$\text{cow} \in Z$$

# Темы оформления

A tale of two primes

Bert

November 20, 2025

Bert A tale of two primes

Different Theme

This uses Warsaw theme with beaver color theme.

## Выводы

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## Итоги работы

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В ходе лабораторной работы были освоены:

- структура презентации `beamer`;
- работа с различными типами блоков;
- использование `\pause` и `\uncover` для анимации;
- применение тем (`Warsaw`, `Copenhagen`) и цветовых схем;
- анализ визуальных результатов и поведения механизмов `beamer`.

Работа подтвердила, что `beamer` предоставляет гибкие инструменты для создания научных и учебных презентаций в `LaTeX`.