primarynamedregularcrimson Subtitle : Frankfurt Theme

Beamer By Example

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[3]Universityþ ofþ Dundeeþ

Conferenceþ onþ Tastefulþ Presentations,þ 2008þ

Test de listing

Testþ deþ codeþ Pythonþ

```
#!/usr/bin/env python
import socket
import subprocess
import sys
from datetime import datetime

# Clear the screen
subprocess.call('clear', shell=True)

# Ask for input
remoteServer    = raw_input("Enter a remote host to scan
remoteServerIP  = socket.gethostbyname(remoteServer)

# Print a nice banner with information on which host we
print "-" * 60
print "Please wait, scanning remote host", remoteServerI
print "-" * 60
```

Outline

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Beamer

Featuresþ

Writtenþ byþ Tillþ Tantauþ whileþ completingþ hisþ PhD.þ

- Processþ withþ eitherþ `pdflatex` orþ `latex+dvips`

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- Easy navigation through sections & subsections
- Many templates and examples included in package

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- `tableofcontents` works
- Overlays & dynamic effects easily created
- Easy navigation through sections & subsections
- Many templates and examples included in package
- `article` style can be used to produce notes

Processing

This document was processed with

- `latex`

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so as to allow use of the package `pstricks`.

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If processing fails, try deleting all aux files.
The alternative is to use pdflatex & pdf or jpg graphics

Colouring Text

This a 2-stage process

- Define the colour
  `\setbeamercolor{blue}{fg=blue!50}`

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  `{\usebeamercolor[fg]{blue} Some blue text}`
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- or `\newcommand{\green}[1]{\usebeamercolor[fg]{green}#1}`
  `\green{some green text}`....some green text

`\alert<4>{Colours predefined in pstricks}`

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Subtitle: A Short Example

- Use `itemize` a lot with `\pause`

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- Useþ `itemize` aþ lot–withþ `\pause`
- Useþ veryþ shortþ sentencesþ orþ shortþ phrases.þ

```
\begin{itemize}
\item
  Use \texttt{itemize} a lot--with \pause
\item
  Use very short sentences or short phrases.
\end{itemize}
```

Uncovering Text

Subtitle:þ Aþ Longerþ Exampleþ

Youþ canþ createþ overlays.þ.þ.þ

- usingþ theþ \pause command:þ
  - Firstþ item.þ (þ\pause)þ

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You can create overlays...

- using the `\pause` command:
  - First item. (`\pause`)
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- using overlay specifications:

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Uncover & alert

- Apple
- Peach
- Plum
- Orange

```
\begin{itemize}[<+-| alert@+>]
   \item Apple
   \item Peach
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   \item Orange
\end{itemize}
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Uncovering Equations

$$A =$$

Uncovering Equations

$$A = B$$

Uncovering Equations

$$\begin{aligned} \mathrm{A} &= \mathrm{B} \\ &= \mathrm{C} \end{aligned}$$

Uncovering Equations

$$\begin{aligned} A &= B \\ &= C \\ &= D \end{aligned}$$

```
\begin{align*}
A &=  \uncover<2->{B}\\
\uncover<2->{&=C\\}
\uncover<3->{&=D\\}
\end{align*}
```

An example of replacement

This uses five overlays, each separate equations. . .

$$\frac{\mathrm{d}}{\mathrm{d}x}\frac{x+3}{(x-1)^2} =$$

Alignment not ideal.

An example of replacement

This uses five overlays, each separate equations. . .

$$\frac{\mathrm{d}}{\mathrm{d}x}\frac{x+3}{(x-1)^2} = \frac{(x-1)^2 - 2(x+3)(x-1)}{(x-1)^4}$$

\alt is used to replace the first line

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$$= \frac{(x-1)^2 - 2(x+3)(x-1)}{(x-1)^4}$$

and then \visible, as opposed to \uncover. Alignment not ideal.

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Alignment not ideal.

An example of align with replacement

Threeþ overlays,þ .þ.þ.þ

$$left = \text{rhs}þ\ \texttt{1}þ$$

```
\begin{align*}
   left&=\alt<1>{rhs1}{\text{alternate rhs}}\\
  \visible<3->{&=rhs3}
\end{align*}
```

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Usesþ \altþ andþ \visible,þ asþ opposedþ toþ \uncover.þ Alignmentþ spoiledþ becauseþ alternativeþ isþ longerþ thanþ original.þ

An example of align with replacement

Use of \phantom to add invisible text to 3rd overlay to ensure correct alignment when \alt string is longest. . .

$$\text{left} = \text{rhs } 1$$

```
\begin{align*}
   \text{left}&=
        \alt<1>{\text{rhs 1}}{\text{alternate rhs 2}}\\
   \visible<3->
        {&=\text{rhs 3}\phantom{extra appended}}\\
\end{align*}
```

An example of align with replacement

Useþ ofþ \phantomþ toþ addþ invisibleþ textþ toþ 3rdþ overlayþ toþ ensureþ correctþ alignmentþ whenþ \altþ stringþ isþ longest.þ.þ.þ

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The align environment with replacement

$$\frac{\mathrm{d}}{\mathrm{d}x}\frac{x+3}{(x-1)^2} =$$

.þ

The align environment with replacement

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\altþ replacesþ theþ firstþ lineþ .þ

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&= \frac{(x-1)^2-2(x+3)(x-1)}{(x-1)^4} \\
&= \frac{(x-1)((x-1)-2(x+3))}{(x-1)^4} \\
&= \frac{((x-1)-2(x+3))}{(x-1)^3} = -\frac{x+7}{(x-1)^3}
\end{aligned}$$

\alt replaces the first line and then \visible, as opposed to \uncover. Alignment is fixed.

Uncovering Rows

[]1blue!20red!10þ

Classþ	Aþ	Bþ	Cþ	Dþ
Xþ	1þ	2þ	3þ	4þ

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```
\usepackage{colortbl}
```

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```
\usepackage{colortbl}

\rowcolors[]{1}{blue!20}{red!10}
\begin{tabular}{l!{\vrule}cccc}\hline
Class & A &  B &  C &  D\\\hline
X & 1 &  2 &  3 &  4 \\\pause
Y & 3 &  4 &  5 &  6 \\\pause
Z &     5 &   6 &  7 &  8
\end{tabular}
```

Uncovering Columns

Class	A

[]1blue!20red!10

Uncovering Columns

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Classþ	Aþ	Bþ
		2þ
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```
\begin{tabular}%
  {l!{\vrule}c<{\onslide<2->}%
     c<{\onslide<3>}
     c<{\onslide<4->}c}
     ....
 \end{tabular}
```

c<{decl.} insertsþ decl.þ rightþ afterþ theþ entryþ forþ theþ column.þ

Theorem and Proof

Theoremþ

Thereþ isþ noþ largestþ primeþ numberþ

Démonstration.þ

- Supposeþ p ...þ theþ largestþ primeþ

Theorem and Proof

Theorem

There is no largest prime number

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- Suppose p ... the largest prime
- Let q be the product of the first p numbers

Theorem and Proof

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There is no largest prime number

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- Suppose p ... the largest prime
- Let q be the product of the first p numbers
- Then $q + 1$ is not divisible by any of them

Theorem and Proof

Theorem

There is no largest prime number

Démonstration.

- Suppose p ... the largest prime
- Let q be the product of the first p numbers
- Then $q + 1$ is not divisible by any of them
- Thus $q + 1$ is a prime number larger than p.

Theorem and Proof

Theorem. *There is no largest prime number.*

Démonstration.

- Suppose p ... the largest prime
- Let q be the product of the first p numbers
- Then $q + 1$ is not divisible by any of them
- Thus $q + 1$ is a prime number larger than p.

□

Theorem and Proof-Code

```
\begin{theorem}
   There is no largest prime number
\end{theorem}

\begin{proof}
\begin{itemize}
\item Suppose $p$ were the largest prime\pause
\item Let $q$ be ... first $p$ numbers\pause
\item Then $q+1$ is not divisible ...\pause
\item Thus $q+1$ is a prime ... $p$.\pause
\end{itemize}
\end{proof}
```

Cantor's Theorem

Theorem

$\alpha < 2^\alpha$ *for all ordinals* α.

▸ Proof details

Printing slides for handouts

Withþ theþ headerþ
\documentclass[t,handout]{beamer}þ

(i)þ theþ t optionþ specifiesþ verticallyþ alignedþ topþ framesþ

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\documentclass[t,handout]{beamer}

(i) the t option specifies vertically aligned top frames

(ii) all piecewise defined slides are aggregated into one.

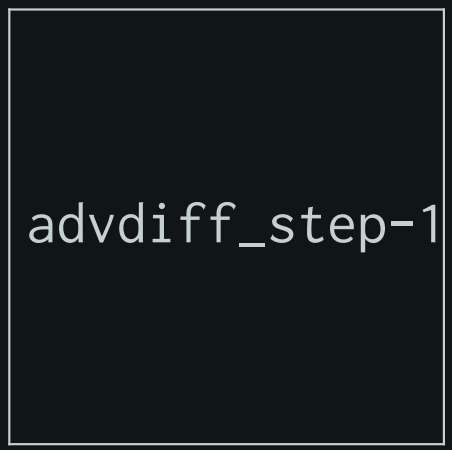
(iii)
```
\usepackage{enumerate}
...
\begin{enumerate}[<+->][(i)]
  \item the \texttt{\blue{t}} option specifies ....
  \item all piecewise defined ....
\end{enumerate}
```

Printing as article class

Theþ headerþ
\documentclass{article}þ
andþ packageþ
\usepackage{beamerarticle}þ
causeþ theþ materialþ toþ beþ typesetþ asþ aþ “normal”þ
article—allþ frameþ referencesþ areþ ignored.þ

Graphics & Text Side by Side

```
\begin{columns}[b]
 \begin{column}{.25\textwidth}
       \includegraphics[width=1.3in]%
            {FILE.epsc}
 \end{column}
  \begin{column}{.75\textwidth}
       text column
  \end{column}
\end{columns}
```



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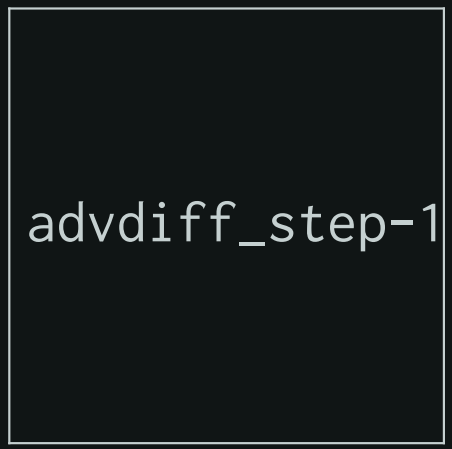

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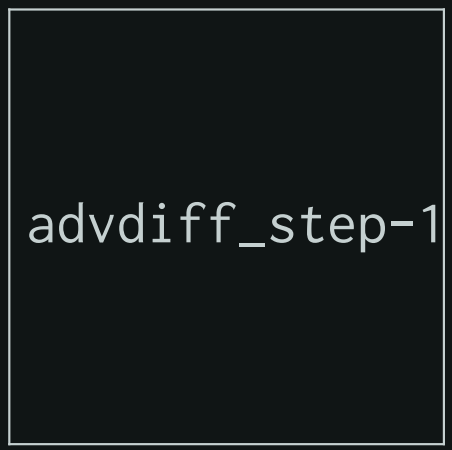

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\end{columns}
```
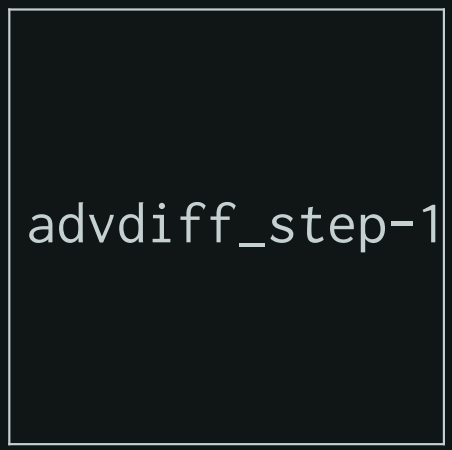
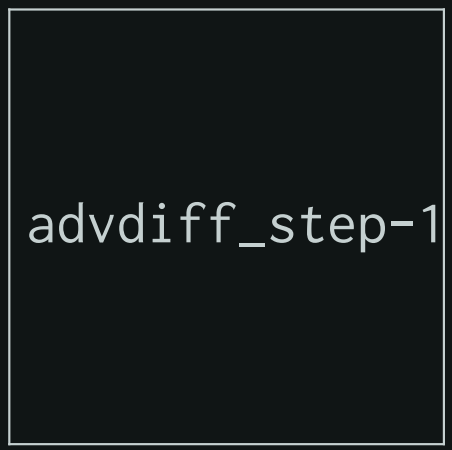



Graphics & Text Side by Side

```
\begin{columns}[b]
 \begin{column}{.25\textwidth}
       \includegraphics[width=1.3in]%
            {FILE.epsc}
 \end{column}
  \begin{column}{.75\textwidth}
       text column
  \end{column}
\end{columns}
```



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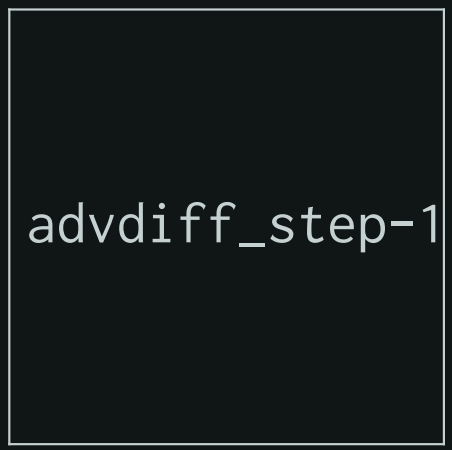

[We actually use semiverbatim & incremental alerts.]

Householder formula

The Householder formula below lets one compute $f(x_*) = 0$ for an arbitrary f.

$$x_{k+1} \mapsto \Phi_n(x_k) = x_k + (n-1)\frac{\left(\frac{1}{f(x_k)}\right)^{n-2}}{\left(\frac{1}{f(x_k)}\right)^{n-1}} + f(x_k)^{n+1}\mathrm{NA}[linecolor = red$$

(1)

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where $n \geqslant 2$ and NBψ is an arbitrary function. [linecolor=red,angleA=90,angleB=270]->NBNA

Householder formula

Theþ Householderþ formulaþ belowþ letsþ oneþ computeþ $f(x_*) = 0$ forþ anþ arbitraryþ f.þ

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(1þ)þ

whereþ $n \geqslant 2$ andþ NBþψ isþ anþ arbitraryþ function.þ [linecolor=red,angleA=90,angleB=270]->NBNAþ Formulaþ (þ1þ)þ givesþ anþ iterationþ ofþ orderþ n convergingþ towardsþ x_* suchþ that:þ $f(x_*) = 0$.þ

Summary

- Theþ firstþ mainþ messageþ ofþ yourþ talkþ inþ oneþ orþ twoþ lines.þ

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- Outlookþ
  - Somethingþ youþ haven’tþ solved.þ
  - Somethingþ elseþ youþ haven’tþ solved.þ

Cantor's Theorem

Theorem. $\alpha < 2^\alpha$ *for all ordinals* α.

Démonstration. As shown by Cantor...

□

Return

For Further Reading I

D. F. Griffiths & D. J. Higham.
Learning LaTeX.
SIAM, 1997.

S. Someone.
On this and that.
Journal of This and That, 2(1):50–100, 2000.

D.F. Griffiths
Beamer By Example
http://www.maths.dundee.ac.uk/~dfg/talks.shtml