

Beamer Slides using Pandoc and Markdown

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Fudan University

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Introduction

`pandoc`

`pandoc-crossref` filter

`pandoc-citeproc` filter



Introduction



Why and Why not

Why Markup Language?

- ▶ Separate “content” with “style”.

Why Pandoc and Beamer?

- ▶ For professional presentation.
- ▶ Tikz diagrams.
- ▶ Cross reference



A simple example intro.md

```
---  
title: Beamer Slides using Pandoc and Markdown  
author: Wai-Shing Luk  
bibliography: papers.bib  
...
```

```
# Introduction {#sec:intro}
```

```
## Why and Why not
```

```
### Why Markup Language?
```

- Separate "content" with "style".

```
### Why Beamer?
```

- For professional presentation.
- Tikz diagrams.



pandoc



pandoc

Pandoc is a Haskell library for converting from one markup format to another¹, and a command-line tool that uses this library. It can read Markdown and write L^AT_EX or Beamer.

To compile:

```
$ pandoc -s -t beamer beamer.yaml intro.md -o intro.tex
```

or directly to a pdf file:

```
$ pandoc -t beamer beamer.yaml intro.md -o intro.pdf
```

¹This is a footnote.



A simple header beamer.yaml

```
---
fontsize: 10pt
classoption:
  - serif,onlymath
institute: Fudan University
date: \today
link-citations: true
colorlinks: true
header-includes:
  - \usetheme{default}
  - \usepackage{tikz,pgf,pgfplots}
  - \usetikzlibrary{arrows}
  - \definecolor{qqqqff}{rgb}{0.,0.,1.}
  - \newcommand{\columnsbegin}{\begin{columns}}
  - \newcommand{\columnsend}{\end{columns}}
  - \newcommand{\col}[1]{\column{#1}}
  - \pgfdeclareimage[height=0.5cm]{fudan-logo}{fudan-logo.jpg}
  - \logo{\pgfuseimage{fudan-logo}}
...
```



Render Mathematical Equations using LaTeX

Consider the following problem:

```
$$\begin{array}{ll} \text{\text{minimize}} & f_0(x), \\ \text{\text{subject to}} & F(x) \text{\text{\texttt{\textbackslash succeq}}} 0, \\ \end{array}$$ \text{\texttt{\textbackslash#eq:semidef}}
```

- $F(x)$: a matrix-valued function
- $A \text{\texttt{\textbackslash succeq}} 0$ denotes A is positive semidefinite.

Consider the following problem:

$$\begin{array}{ll} \text{minimize} & f_0(x), \\ \text{subject to} & F(x) \succeq 0, \end{array} \quad (1)$$

- ▶ $F(x)$: a matrix-valued function
- ▶ $A \succeq 0$ denotes A is positive semidefinite.



How to make a two-column slide

```
\columnsbegin
```

```
\col{0.5\textwidth}
```

Left-hand side

```
\col{0.5\textwidth}
```

Right-hand side

```
\columnsend
```



Figures

An image occurring by itself in a paragraph will be rendered as a figure with a caption.

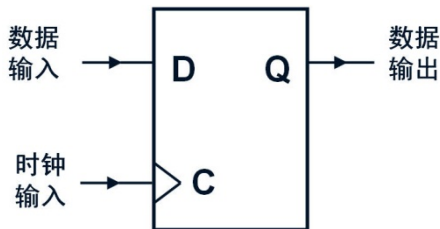


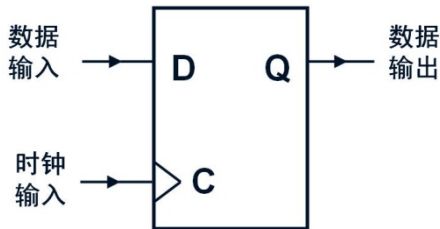
Figure 1: This is the caption

(source)

```
![This is the caption](media/image2.jpeg){#fig:figure0}
```

Figures (cont'd)

If you just want a regular inline image, just make sure it is not the only thing in the paragraph. One way to do this is to insert a nonbreaking space after the image:



(source)

![No caption](media/image2.jpeg)\

Render Diagrams using Tikz

```
\begin{figure}[hp]
\centering
\input{pole2polar.tikz}
\caption{Example of constructing
the polar of a point}%
\label{fig:pole2polar}
\end{figure}
```



Figure 2: Example of constructing the polar of a point



Render Diagrams using Tikz

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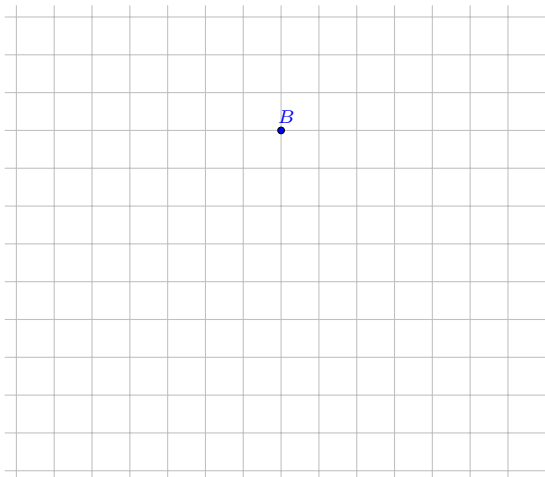


Figure 2: Example of constructing the polar of a point



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  the polar of a point}%
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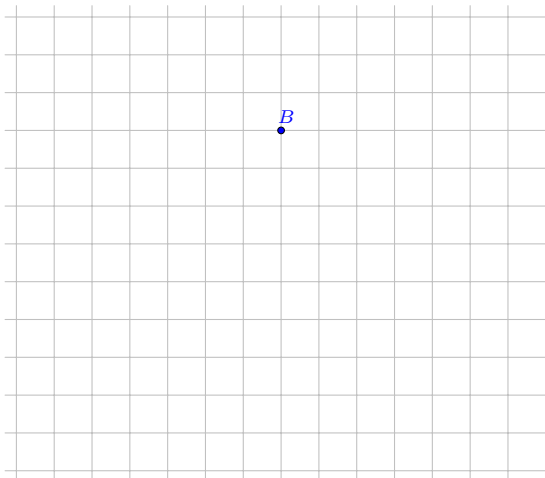


Figure 2: Example of constructing the polar of a point



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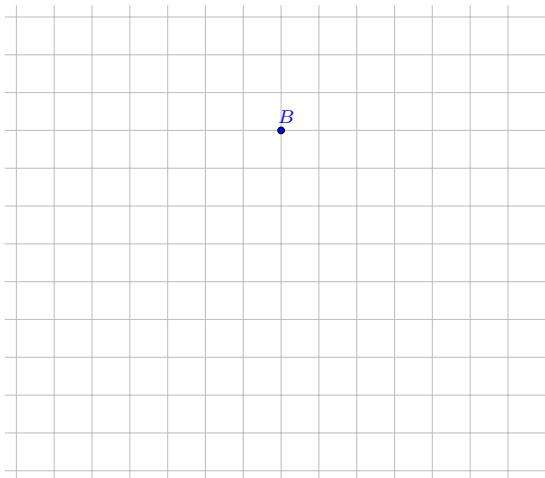


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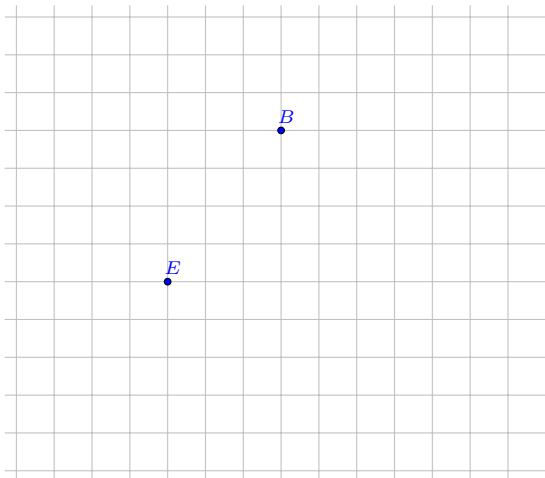


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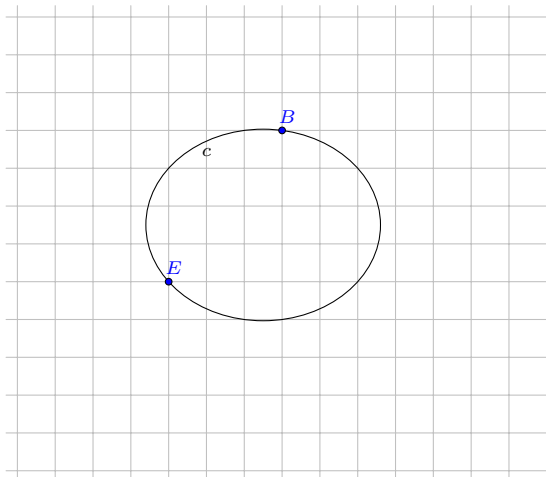


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\begin{figure}[hp]
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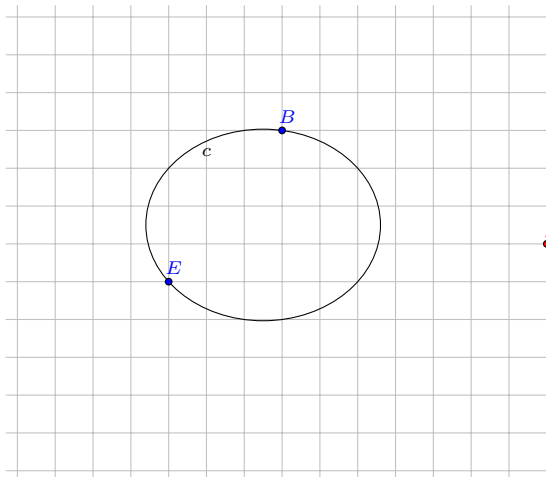


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\begin{figure}[hp]
\centering
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```

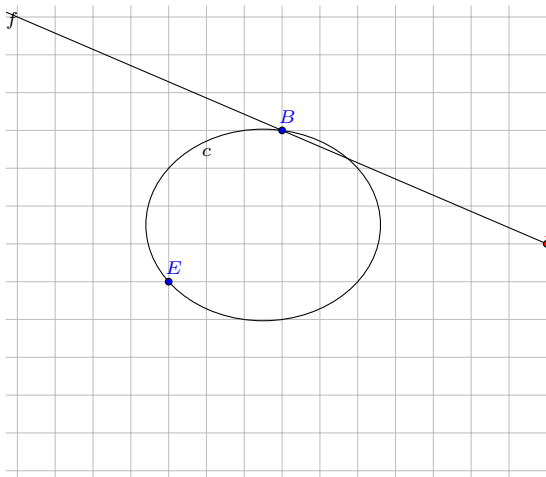


Figure 2: Example of constructing the polar of a point



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\begin{figure}[hp]
\centering
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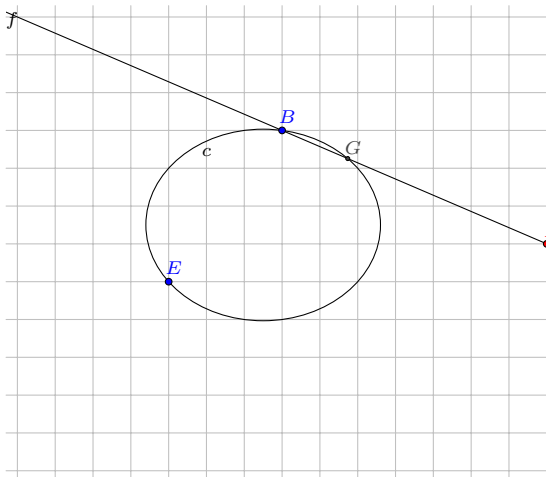


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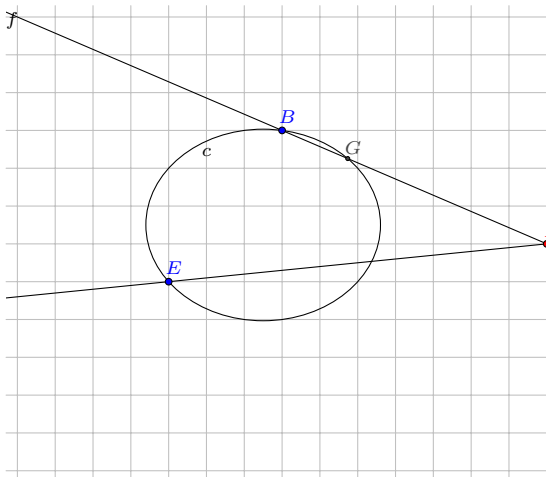


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\begin{figure}[hp]
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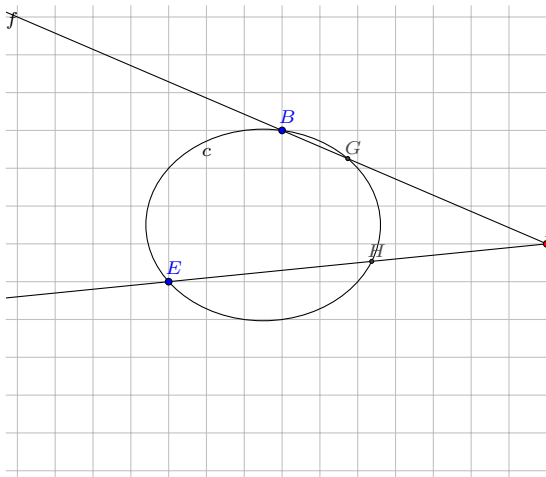


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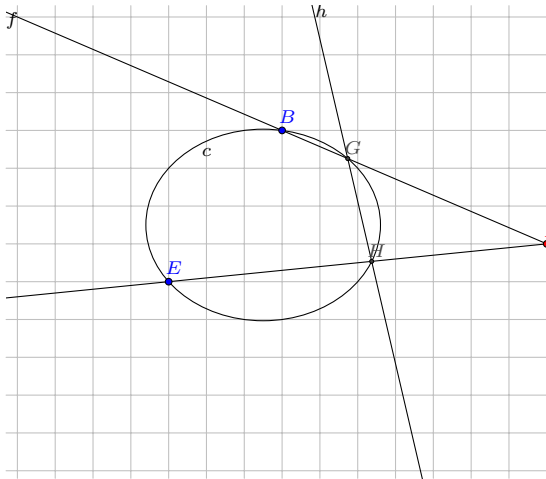


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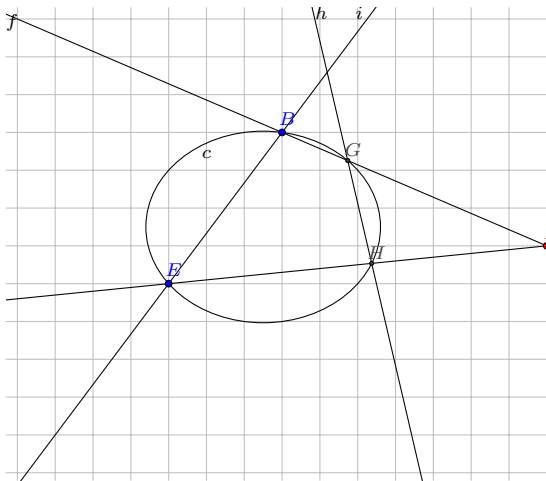


Figure 2: Example of constructing the polar of a point



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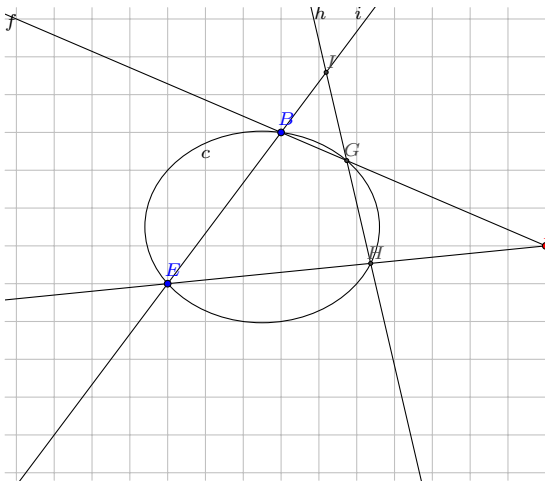


Figure 2: Example of constructing the polar of a point



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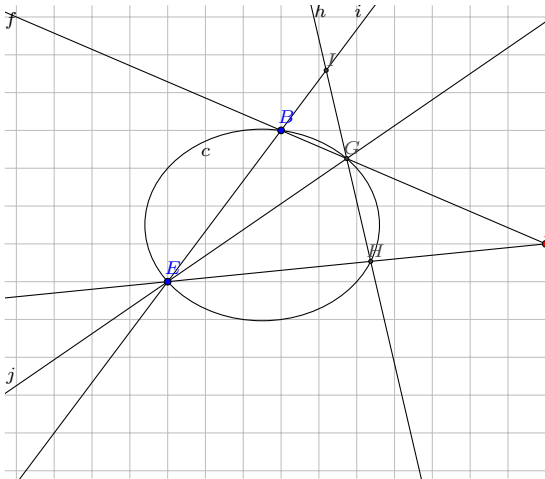


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\begin{figure}[hp]
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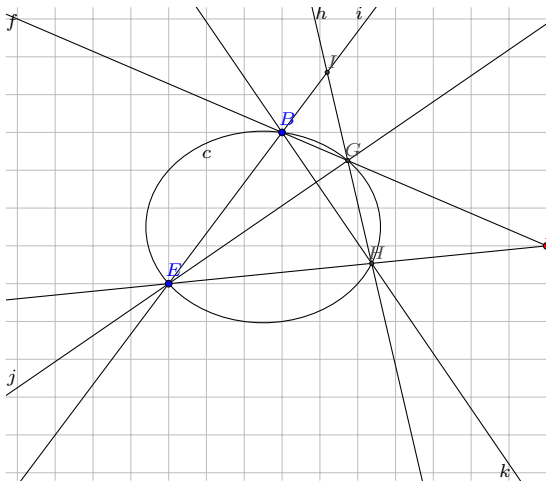


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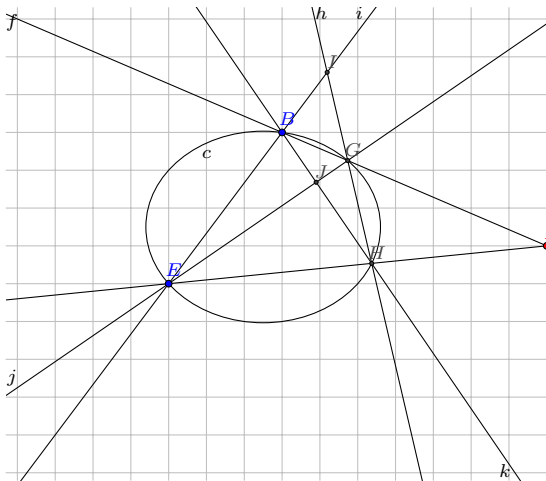


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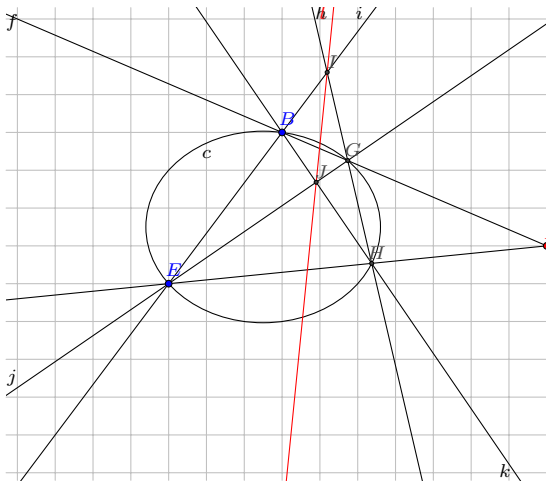


Figure 2: Example of constructing the polar of a point



Table

Simple tables can be generated using Markdown.

Costs	28nm	20nm
-----	-----	-----
Fab Costs	3B	4B - 7B
Process R&D	1.2B	2.1B - 3B
Mask Costs	2M - 3M	5M - 8M
Design Costs	50M - 90M	120M - 500M

: Fab, process, mask, and design costs {#tbl:fab}

Table 1: Fab, process, mask, and design costs

Costs	28nm	20nm
Fab Costs	3B	4B - 7B
Process R&D	1.2B	2.1B - 3B
Mask Costs	2M - 3M	5M - 8M
Design Costs	50M - 90M	120M - 500M



pandoc-crossref filter



pandoc-crossref filter

With this filter, you can cross-reference figures (see Fig. 1 and Fig. 2), display equations (see Eq. (1)), tables (see Table 1) and sections § 1, § 2

To compile:

```
$ pandoc -F pandoc-crossref -t beamer beamer.yaml \
  crossref.yaml beamer.md -o intro.pdf
```



A sample crossref.yaml

```
---
cref: True
codeBlockCaptions: True
lofTitle: "## List of Figures"
lotTitle: "## List of Tables"
autoSectionLabels: True
figureTemplate: $$t$$
tableTemplate: $$t$$
figPrefix:
  - "Fig."
eqnPrefix:
  - "Eq."
tblPrefix:
  - "Table"
lstPrefix:
  - "Listing"
secPrefix:
  - "§"
...
```



Code blocks

There are a couple options for code block labels. Those work only if code block id starts with `lst:`, e.g. `{#lst:label}`



caption attribute

`caption` attribute will be treated as code block caption. If code block has both `id` and `caption` attributes, it will be treated as numbered code block.

```
main :: IO ()  
main = putStrLn "Hello World!"
```

(source)

```
{#lst:captionAttr .haskell caption="Listing caption A"}
```



Table-style captions

Enabled with `codeBlockCaptions` metadata option. If code block is immediately adjacent to paragraph, starting with `Listing:` or `:`, said paragraph will be treated as code block caption.

Listing: Listing caption B

```
main :: IO ()  
main = putStrLn "Hello World!"
```



pandoc-citeproc filter



Bibliography

- ▶ See Aalst, Weijters, and Maruster (2004), or
- ▶ See (Baldi et al. 2008; Canfora and Cerulo 2005).

(source)

- See @Aalst-etal_2004, or
- See [[@Baldi-etal_2008;@Canfora-Cerulo_2005a](#)] .

To compile:

```
$ pandoc -F pandoc-crossref --citeproc -t beamer \
  beamer.yaml crossref.yaml beamer.md -o intro.pdf
```



References I

- Aalst, W. van der, T. Weijters, and L. Maruster. 2004. “Workflow Mining: Discovering Process Models from Event Logs.” *IEEE Transactions on Knowledge and Data Engineering* 16 (9): 1128–42. <https://doi.org/10.1109/TKDE.2004.47>.
- Baldi, Pierre F, Cristina V Lopes, Erik J Linstead, and Sushil K Bajracharya. 2008. “A Theory of Aspects as Latent Topics.” In *ACM Sigplan Notices*, 43:543–62. 10. ACM. <https://doi.org/10.1145/1449955.1449807>.
- Canfora, G., and L. Cerulo. 2005. “Impact Analysis by Mining Software and Change Request Repositories.” In *11th IEEE International Software Metrics Symposium (METRICS'05)*, 29. Como, Italy: IEEE. <https://doi.org/10.1109/METRICS.2005.28>.

