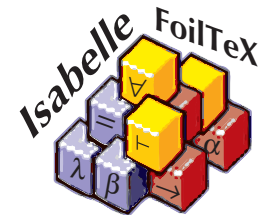


# Simple slides with FoilTeX

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# Abstract

Isabelle is a formal document preparation system. This example shows how to use it together with Foil $\text{\TeX}$  to produce slides in  $\text{\LaTeX}$ . See <https://ctan.org/pkg/foiltex> for further information.

# Introduction

## Some slide

### Point 1: ABC

- something
- to say . . .

### Point 2: XYZ

- more
- to say . . .

## Another slide

### Key definitions:

Informal bla bla.

**definition**  $foo = True$  — side remark on *Document.foo*

**definition**  $bar = False$  — side remark on *Document.bar*

**lemma**  $foo$   $\langle proof \rangle$

# **Application: Cantor's theorem**

## Informal notes

Cantor's Theorem states that there is no surjection from a set to its powerset. The proof works by diagonalization. E.g. see

- <http://mathworld.wolfram.com/CantorDiagonalMethod.html>
- [https://en.wikipedia.org/wiki/Cantor's\\_diagonal\\_argument](https://en.wikipedia.org/wiki/Cantor's_diagonal_argument)

## Formal proof

**theorem Cantor:**  $\nexists f :: 'a \Rightarrow 'a \text{ set}. \forall A. \exists x. A = f x$

**proof**

**assume**  $\exists f :: 'a \Rightarrow 'a \text{ set}. \forall A. \exists x. A = f x$

**then obtain**  $f :: 'a \Rightarrow 'a \text{ set}$  **where**  $*$ :  $\forall A. \exists x. A = f x$  ..

**let**  $?D = \{x. x \notin f x\}$

**from**  $*$  **obtain**  $a$  **where**  $?D = f a$  **by** *blast*

**moreover have**  $a \in ?D \longleftrightarrow a \notin f a$  **by** *blast*

**ultimately show** *False* **by** *blast*

**qed**



# Conclusion

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