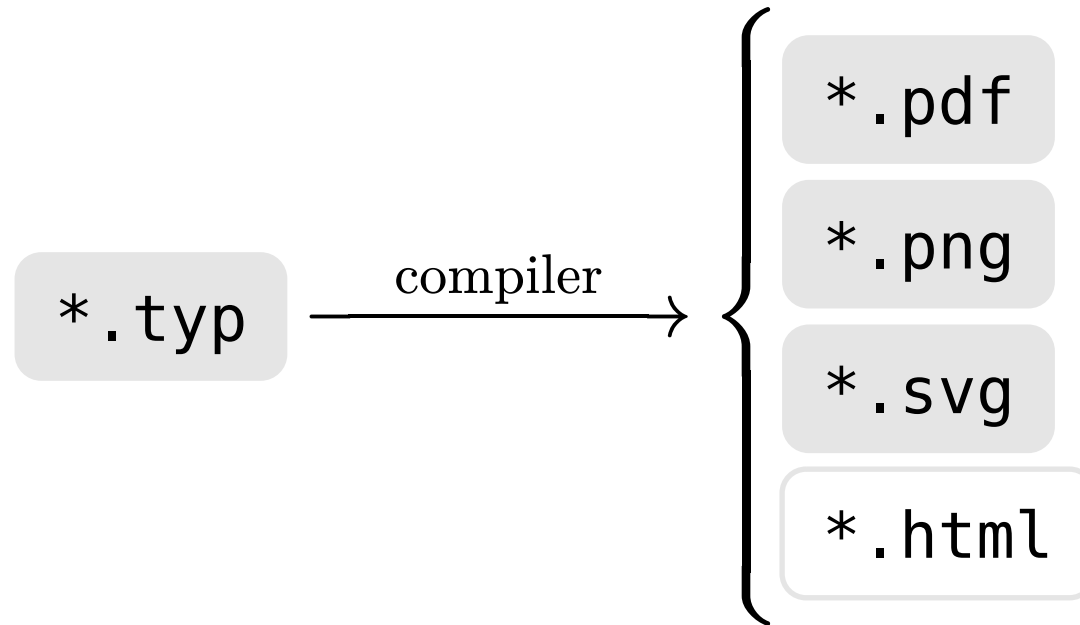


*AN INTRODUCTION TO*  
**typst**

Typst is a  
**typesetting**  
*system*



3 modes:  
markup, *math*, code

# Markup mode

```
1 Odi et amo.  
2 Quare id faciam fortasse requiris.\n3 Nescio,  
4 sed fieri sentior et excrucior.  
5  
6 Catullus
```

Odi et amo. Quare id faciam fortasse requiris.  
Nescio, sed fieri sentior et excrucior.  
Catullus

```
1 We can make our text *bold* or  
  _italic_.
```

We can make our text **bold** or *italic*.

```
1 | = Big title
2 | == Small title
3 | === Smaller title
4 | ==== Even smaller title
```

**Big title**

**Small title**

**Smaller title**

**Even smaller title**

```
1 | Three italian dishes are:
2 | - Pasta
3 | - Pizza
4 | - Tiramisù
```

Three italian dishes are:

- Pasta
- Pizza
- Tiramisù

```
1 | My favorite mangas are:  
2 | + One Piece  
3 | + Attack on Titan
```

```
1 | We can write code inline  
2 | like this `print("Hello")` or  
3 | like this ```py print("Hello")```.
```

```
1 | We can make a code block like this:  
2 | ```py  
3 | print("Hello")  
4 | ```
```

My favorite mangas are:

1. One Piece
2. Attack on Titan

We can write code inline like this

`print("Hello")` or like this `print("Hello")`.

We can make a code block like this:

```
print("Hello")
```

```
1 | // We can make a comment  
2 | /* In two different ways */
```



# Math mode

```
1 | The most beautiful equation in math
   | is considered by many to be
2 | $e^{i \pi} = -1$.
```

```
1 | A more general formula exists:
2 | $
3 | e^{i \theta}
4 | = \sum_{n=0}^{+\infty} (i \theta)^n / (n!)
5 | = \cos(\theta) + i \sin(\theta).
6 | $
```

The most beautiful equation in math is considered by many to be  $e^{i\pi} = -1$ .

A more general formula exists:

$$e^{i\theta} = \sum_{n=0}^{+\infty} \frac{(i\theta)^n}{n!} = \cos(\theta) + i \sin(\theta).$$

```

1 | $
2 | A union B = emptyset =>
3 | A backslash B = A
4 | $

```

$$A \cup B = \emptyset \Rightarrow A \setminus B = A$$

```

1 | $
2 | Q = 2 pi
3 | "energy at the start" /
4 | "energy dissipated"
5 | $

```

$$Q = 2\pi \frac{\text{energy at the start}}{\text{energy dissipated}}$$

```

1 | $ arrow(F) = m arrow(a) $

```

$$\vec{F} = m\vec{a}$$

```

1 $
2 vec(3,8,15) =
3 mat(1,2,3; 4,5,6; 7,8,9)
4 vec(1,1,0)
5 $

```

$$\begin{pmatrix} 3 \\ 8 \\ 15 \end{pmatrix} = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$$

```

1 $
2 f(x) &= (x+1)^2 &&= x^2 + 2x + 1 \
3 g(x) &= 10(x-1) &&= 10x - 10 \
4 $

```

$$f(x) = (x + 1)^2 = x^2 + 2x + 1$$

$$g(x) = 10(x - 1) = 10x - 10$$

# Code mode

```
1 | #bibliography("example.bib")
```

## Bibliography

- [1] M. A. N. & Isaac L. Chuang, *Quantum Computation and Quantum Information*. Cambridge University Press, 2010.
- [2] P. W. Shor, “Scheme for reducing decoherence in quantum computer memory,” *Physical review A*, vol. 52, no. 4, p. R2493, 1995.

```
1 | #strong("bold"), *bold*
```

**bold, bold**

```
1 | #link("example.com", "Example")
```

Example

```
1 | #let x = "hello"  
2 | I want to say you #x
```

I want to say you hello

```
1 | #let x = [Typst is _amazing_]
2 | #let y = "Typst is _amazing_"
3 | #x \ #y
```

Typst is *amazing*

Typst is \_amazing\_

```
1 | #link("example.com",[_Example_])
2 | #link("example.com")[_Example_]
```

*Example Example*

```
1 | #let nice(it) = "✨" + it + "✨"
2 | #nice("Typst")
```

✨Typst✨

```
1 | #figure(
2 |   image("cow.jpg", width: 6cm),
3 |   caption: [Cowdynamics],
4 | )
```

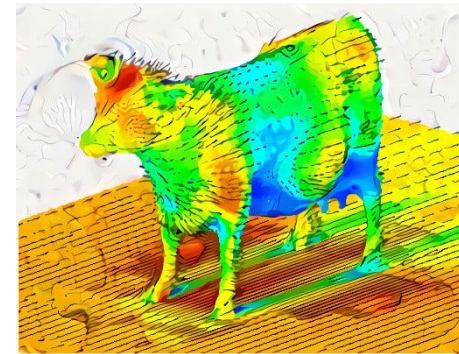


Figure 1: Cowdynamics

```
1  #{
2    let N = 10
3    let n = 1
4    [1 ]
5    for i in range(2, N + 1) {
6        n += i
7        [\+ #i ]
8    }
9    [\= #n]
10 }
```

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$$

```
1  #{  
2    let bool = true  
3    let list = (1, 2, 3)  
4    let dict = (a: 1, b: 2)  
5    let lambda = x => x * 2  
6  }
```



set & show

element  
`#set text(size: 30pt)`  
new defaults

```
1 #set text(font: "New Computer  
Modern")  
2 Hello Typst enthusiasts!
```

Hello Typst enthusiasts!

```
1 #set heading(numbering: "1.i")  
2  
3 = A primary heading  
4 The first block of text after the  
  title  
5  
6 = A secondary heading  
7 The paragraph right after the  
  secondary heading
```

# 1 A primary heading

The first block of text after the title

## 1.i A secondary heading

The paragraph right after the secondary heading

```
1 #set heading(numbering: "1")
2
3 = Referenceable <ref>
4 This is @ref
```

```
1 #set list(marker: "👉", indent: 1cm)
2
3 - Element A
4   - Element A1
5   - Element A2
6 - Element B
```

## 2 Referenceable

This is Section 2

- 👉 Element A
  - 👉 Element A1
  - 👉 Element A2
- 👉 Element B

```
1 #set page(margin: (  
2   top: 2cm,  
3   bottom: 3cm,  
4   left: 3cm,  
5   right: 3cm,  
6 ))
```

```
1 #{  
2   set text(fill: red)  
3   [Alert!]  
4 }  
5 Typst is coming!
```

**Alert!** Typst is coming!

`#show` `link:` `underline`  
filter  
editing function

#show link: underline

means

$(\text{link} \mapsto \text{underline} \circ \text{link})$

```
1 | #show link: underline
2 | #link("example.com", "Example")
```

```
1 | #show heading: it => {
2 |   set text(
3 |     size: 30pt,
4 |     font: "Helvetica"
5 |   )
6 |   it
7 | }
8 |
9 | = Lorem ipsum
10 | #lorem(30)
```

## Example

# Lorem ipsum

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequaleam animo, cum corpore dolemus, fieri.



```
1 #show heading: set text(  
2   size: 30pt,  
3   font: "Helvetica"  
4 )  
5  
6 = Lorem ipsum  
7 #lorem(30)
```

```
1 #show math.equation: align.with(left)  
2 $ F = m a $
```

# Lorem ipsum

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequale doleamus animo, cum corpore dolemus, fieri.

$$F = ma$$

# Templates

```
1 #import "@preview/charged-ieee:0.1.3": ieee
2
3 #show: ieee.with(
4   title: [A Typesetting System to ..],
5   abstract: [...],
6   authors: ((name: "Martin Haug", ..), ..),
7   bibliography: bibliography("example.bib"),
8   ..
9 )
10
11 = Introduction
12 ..
```

# A Typesetting System to Untangle the Scientific Writing Process

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**Abstract**—The process of scientific writing is often tangled up with the intricacies of typesetting, leading to frustration and wasted time for researchers. In this paper, we introduce Typst, a new typesetting system designed specifically for scientific writing. Typst untangles the typesetting process, allowing researchers to compose papers faster. In a series of experiments we demonstrate that Typst offers several advantages, including faster document creation, simplified syntax, and increased ease-of-use.

**Index Terms**—Scientific writing, Typesetting, Document creation, Syntax

## I. INTRODUCTION

Scientific writing is a crucial part of the research process, allowing researchers to share their findings with the wider scientific community. However, the process of typesetting scientific documents can often be a frustrating and time-consuming affair, particularly when using outdated tools such as LaTeX. Despite being over 30 years old, it remains a popular choice for scientific writing due to its power and flexibility.

and provide evidence for its superiority over other typesetting systems in a variety of scenarios.

## II. METHODS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequale doleamus animo, cum corpore dolemus, fieri tamen permagna accessio potest, si aliquod aeternum et infinitum impendere malum nobis opinemur. Quod idem.

$$a + b = \gamma \quad (1)$$

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequale doleamus animo, cum corpore dolemus, fieri tamen permagna accessio potest, si aliquod aeternum et infinitum impendere malum nobis opinemur. Quod idem licet transferre in voluptatem, ut postea variari voluntas distinguere possit. augeri amplificariue non

# Compilation

## Locally

```
typst compile example.typ
```

```
typst watch example.typ
```

## Online

<https://typst.app/>



# Packages

```
#import "@preview/physica:0.9.5": *
```

```
1 $  
2 curl (grad V + pdv(vb(A), t)) =  
3 pdv(vb(B), t)  
4 $
```

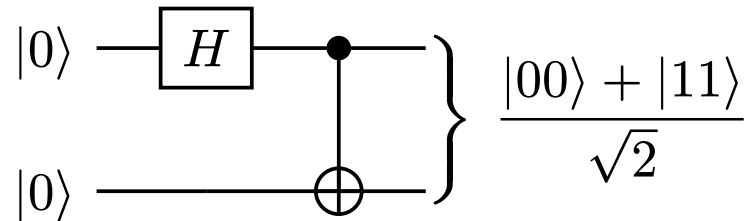
$$\nabla \times \left( \nabla V + \frac{\partial A}{\partial t} \right) = \frac{\partial B}{\partial t}$$

```
1 #let tn = tensor  
2 $  
3 tn(R, +mu, -nu) -  
4 1/2 R tn(g, +mu, -nu) =  
5 8 pi G tn(T, +mu, -nu)  
6 $
```

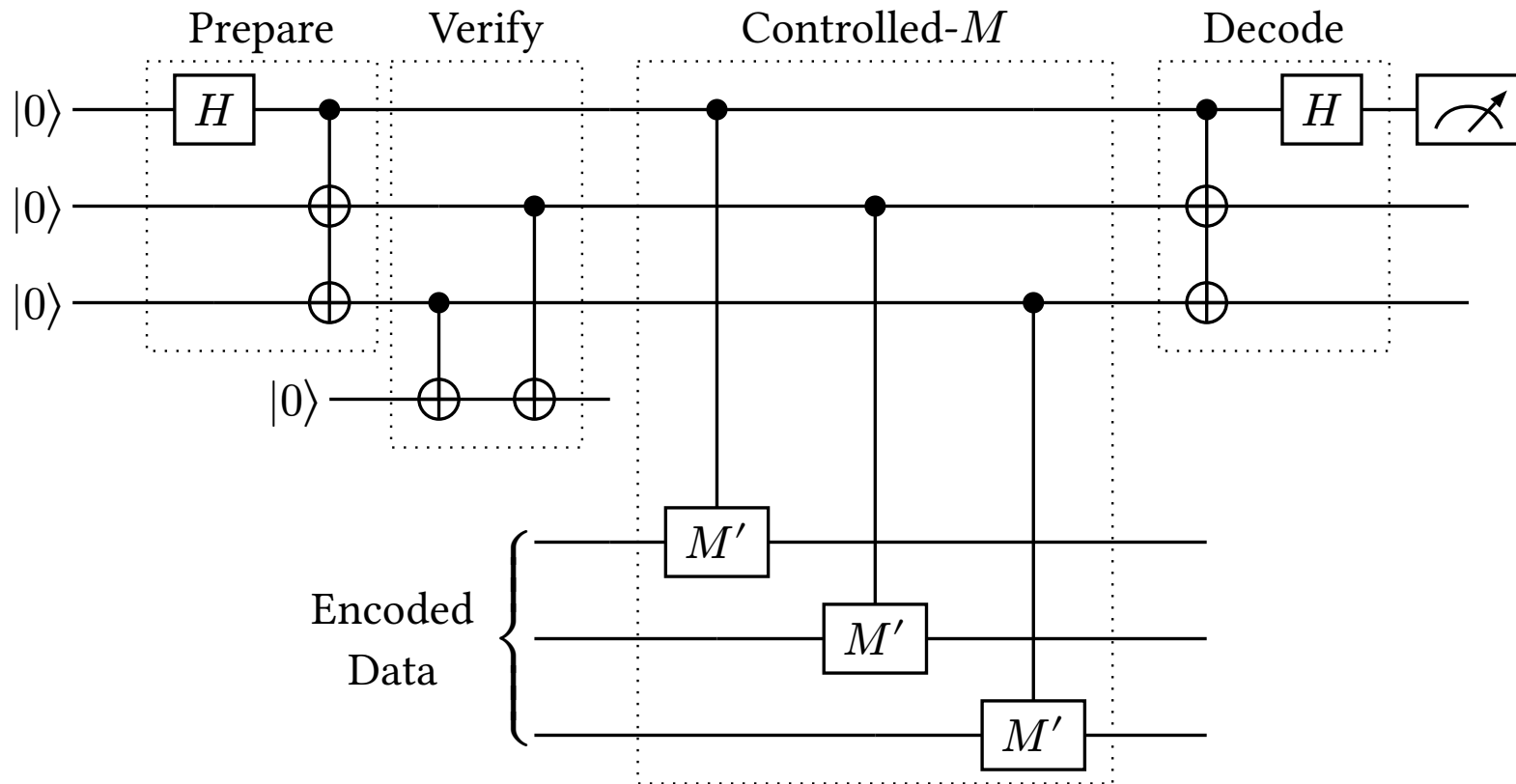
$$R^\mu{}_\nu - \frac{1}{2} R g^\mu{}_\nu = 8\pi G T^\mu{}_\nu$$

```
#import "@preview/quill:0.6.1": *
```

```
1 #import "@preview/quill:0.6.1": *
2 #import "@preview/physica:0.9.5": ket
3
4 #let super = $ (ket(00) + ket(11))/sqrt(2) $
5 #quantum-circuit(
6   lstick($ket(0)$), $H$, ctrl(1), rstick(super, n: 2), [\ ],
7   lstick($ket(0)$), 1, targ(), 1
8 )
```



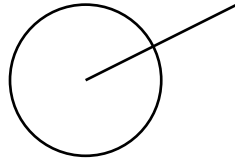
<https://github.com/Mc-Zen/quill/blob/v0.6.1/examples/fault-tolerant-measurement.typ>





```
#import "@preview/cetz:0.3.4"
```

```
1 #import "@preview/cetz:0.3.4"  
2 #cetz.canvas({  
3   import cetz.draw: *  
4   circle((0, 0))  
5   line((0, 0), (2, 1))  
6 })
```



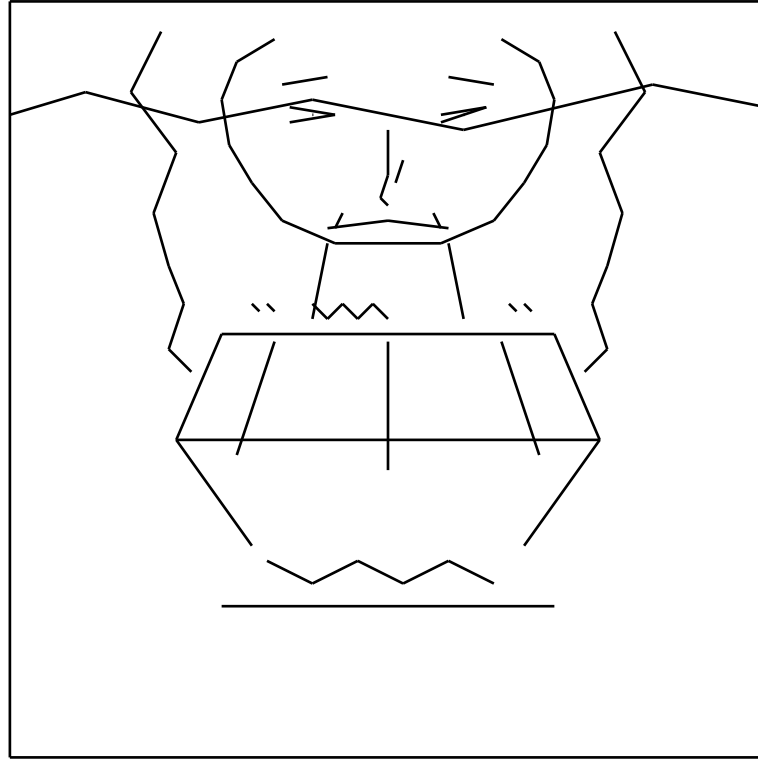


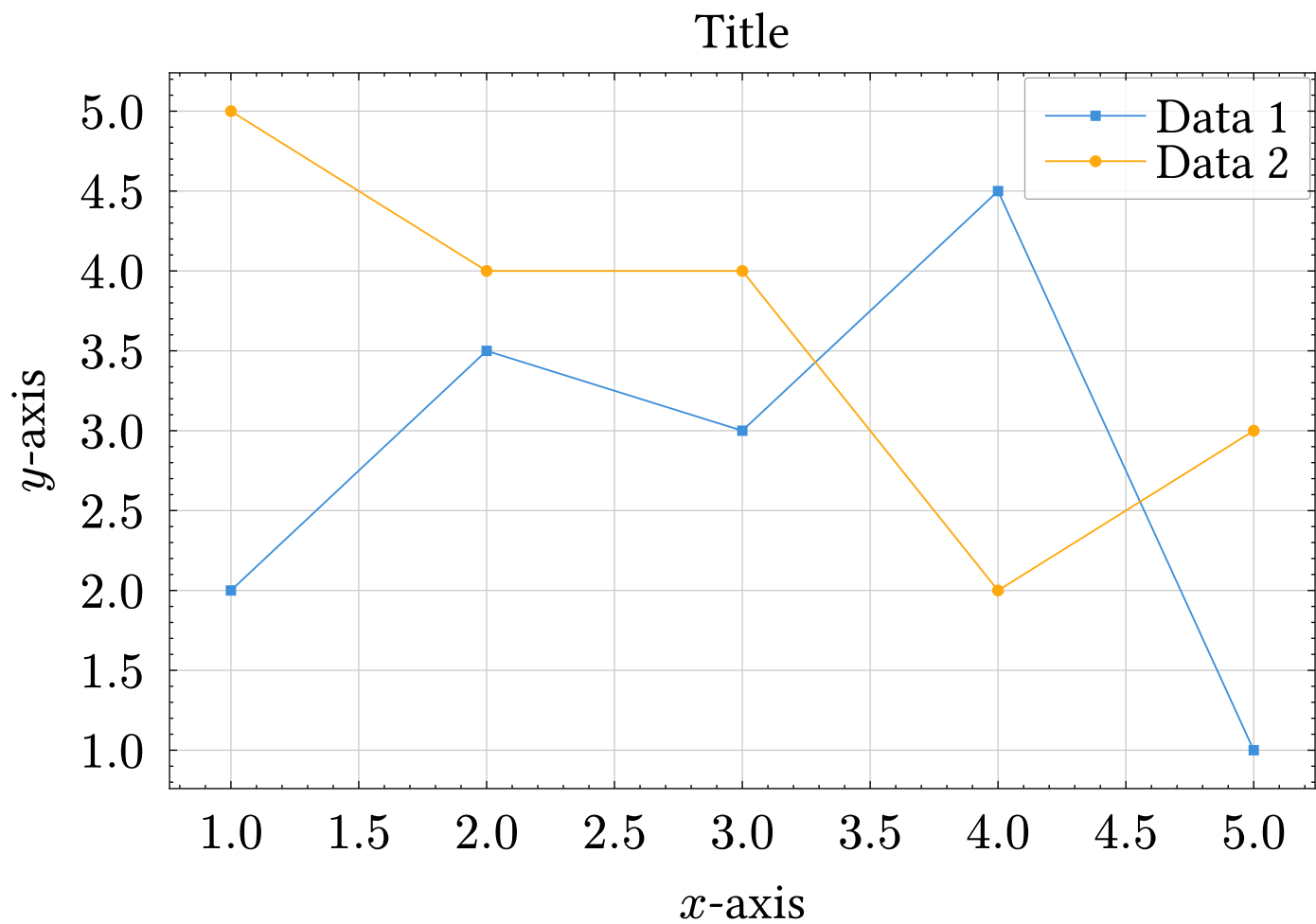
Figure 2: *La Mona Lisa* according to chatGPT

```
#import "@preview/lilaq:0.2.0" as lq
```

```
1 #let data = csv("example.csv").slice(1, none)
2 #let datax = data.map(row => float(row.at(0)))
3 #let datay1 = data.map(row => float(row.at(1)))
4 #let datay2 = data.map(row => float(row.at(2)))
5
6 #lq.diagram(
7   title: [Title],
8   xlabel: [$x$-axis],
9   ylabel: [$y$-axis],
10  width: 16cm,
11  height: 10cm,
12  lq.plot(datax, datay1, mark: "s", label: [Data 1]),
13  lq.plot(datax, datay2, mark: "o", label: [Data 2])
14 )
```

example.csv

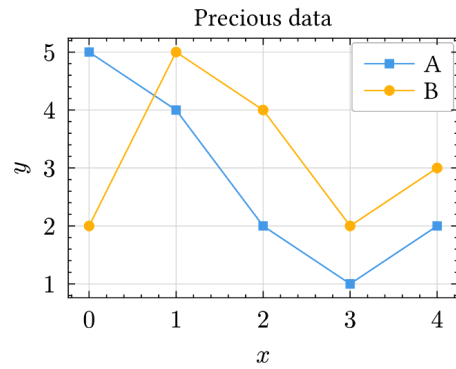
datax	datay1	datay2
1	2	5
2	3.5	4
3	3	4
4	4.5	2
5	1	3



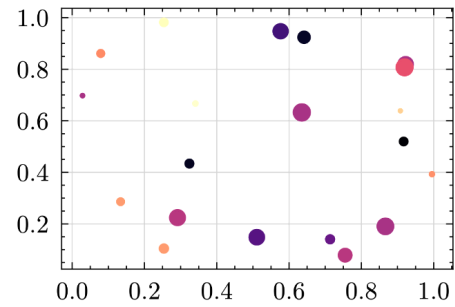
example.csv

datax	datay1	datay2
1	2	5
2	3.5	4
3	3	4
4	4.5	2
5	1	3

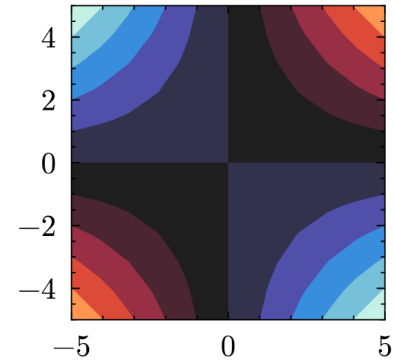
Line plots



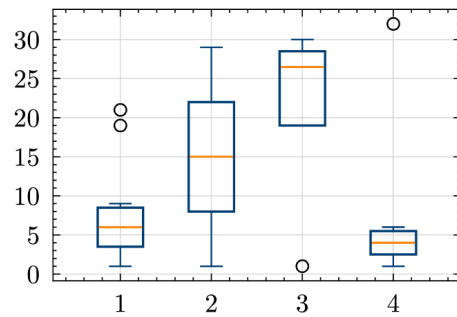
Scatter



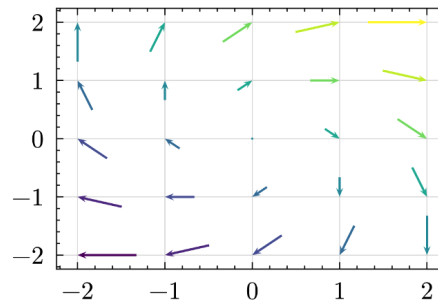
Contour



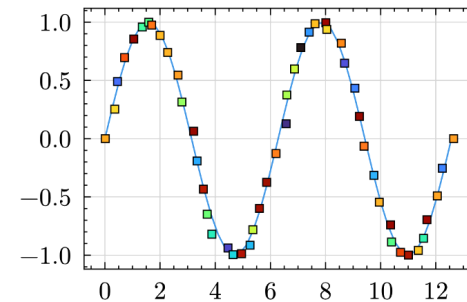
Boxplot



Quiver



Styled marks



```
#import "@preview/wicked:0.1.1": wick
```

```
1 $ :  
2 wick(id: #1, macron(Psi))_alpha (x)  
3 gamma^mu_(alpha beta)  
4 wick(pos: #top, A)_mu (x)  
5 wick(Psi)_beta (x)  
6 wick(macron(Psi))_eta (y)  
7 gamma^nu_(eta rho) (y)  
8 wick(pos: #top, A)_nu  
9 wick(id: #1, Psi)_rho (y)  
10 : $
```

$$: \bar{\Psi}_{\alpha}(x) \gamma_{\alpha\beta}^{\mu} A_{\mu}(x) \underbrace{\Psi_{\beta}(x) \bar{\Psi}_{\eta}(y)} \gamma_{\eta\rho}^{\nu}(y) A_{\nu} \Psi_{\rho}(y) :$$

context  
& *introspection*

```
1 | #context { text.size },
2 | #context { text.font }
```

20pt, libertinus serif

```
1 | Introduction is at:\
2 | #context {
3 |   locate(<intro>).position()
4 | }
5 |
6 | = Introduction <intro>
```

Introduction is at:

(page: 40, x: 430.94pt, y: 211.95pt)

## Introduction



```
1 #context {  
2   for h in query(  
3     heading.where(level: 1)  
4   ) {  
5     h.body  
6     linebreak()  
7   }  
8 }
```

Big title

Bibliography

A primary heading

Referenceable

Lorem ipsum


Lorem ipsum

Introduction

# STRANGER THINGS

# boxes

```
1 This is a
2 #box(fill: red, radius: 10pt, inset: 10pt,
3   text(fill: white) [`BOX`])
4 )
5
6 This is a
7 #block(fill: blue, radius: 10pt, inset: 10pt,
8   text(fill: white) [`BLOCK`])
9 )
```

This is a 

This is a



## 2D input in math mode

```
1 | #let func(..args) = repr(args)
2 | $ func(1,2,3; 4,5,6) $
```

arguments(([1], [2], [3]), ([4], [5], [6]))

# metadata

```
1 #metadata("Useful information")  
2  
3 #context {  
4     query(metadata).last().value  
5 }
```

Useful information

# WASM plugins

```
1 #let square(n) = {                                     25
2   import plugin("example.wasm"): square
3   int.from-bytes(square(bytes((n,)))
4 }
5 #square(5)
```

# Find this presentation

```
1 | #import "@preview/tiaoma:0.3.0"  
2 | #tiaoma.barcode("https://github.com/ZaninDavide/typst-intro", "QRCode")
```



<https://github.com/ZaninDavide/typst-intro>