

Off-Chain Zero-Knowledge Proofs in Proof of Stake Blockchains

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Abstract—This is a placeholder abstract test. The whole template is used in semester projects at Aalborg University (AAU).

I. INTRODUCTION

In this section we present some introductory ways to use the tools within \LaTeX in general, and this template in particular. For example, this is a citation [1], while this is a multi-citation[1, 2].

The column width of the IEEE template is 3.5 inches, so if you generate your plots with this width or less, the output will be the best. For example, Listing 1 contains the code to generate the image in Figure 1 using Python with matplotlib, and exported as pdf (\TeX).

```
1 import matplotlib.pyplot as plt
2
3 plt.rcParams.update({
4     "pgf.texsystem": "pdflatex",
5     "font.family": "serif", # use serif/main font
6     "pgf.preamble": "\n".join([
7         r"\usepackage[utf8x]{inputenc}",
8         r"\usepackage[T1]{fontenc}",
9     ]),
10 })
11
12 fig, ax = plt.subplots(figsize=(3.5, 3.5))
13
14 ax.plot(range(5))
15 ax.text(0.5, 3., "serif")
16 ax.text(0.5, 2., "monospace")
17 ax.text(2.5, 2., "sans-serif")
18 ax.set_xlabel(r"\mu is not \mu")
19
20 fig.tight_layout(pad=.5)
21 fig.savefig("graph.pdf")
```

Listing 1. Code to generate the graph.pdf

A. Tables and Figures

B. Algorithms, Theorems, and Proofs

There are a few different things outside the normal figure and table floats that are very relevant when writing a scientific paper or article. For example, you may wish to typeset theorems as in Theorem 1.

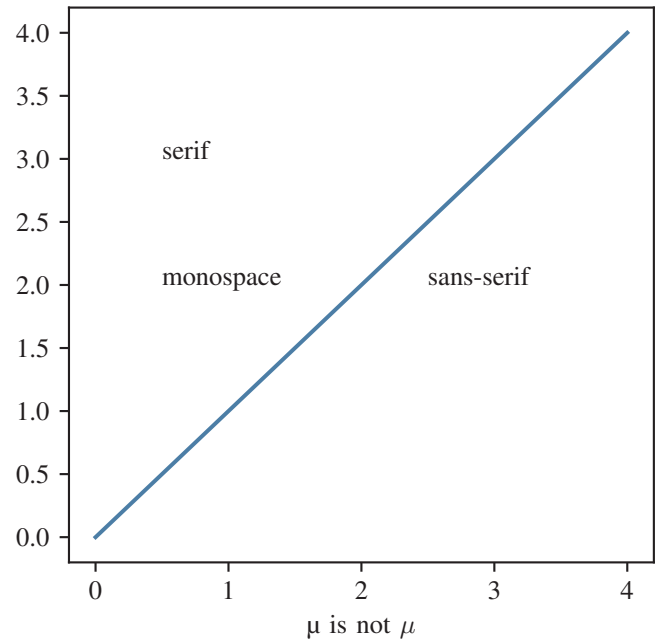


Fig. 1. An example graph drawn using Python's matplotlib library.

Theorem 1 (Pythagorean theorem). *This is a theorem about right triangles and can be summarized in the next equation*

$$x^2 + y^2 = z^2$$

Or ref like Theorem 1 Similarly, for proofs:

Proof. To prove it by contradiction try and assume that the statement is false, proceed from there and at some point you will arrive to a contradiction. \square

Note that proofs are not a numbered environment, and as such can't be referenced by default.

TABLE I
EXAMPLE OF A PRETTY, TWOCOLUMN TABLE.

<i>Hændelser</i>	<i>Klasser</i>				
	Reservation	Gæst	Borgerforening	Kalender	Betaling
Anmodet	✓	✓	✓		
Godkendt	✓		✓		
Afvist	✓		✓		
Redigeret	✓	✓	✓		
Annulleret	✓	✓	✓		✓
Betalt					✓
Refunderet					✓
Kvitteret		✓	✓		
Registreret	✓			✓	
Påmindet		✓	✓		

INSERTION-SORT(A, n)

```

1  for  $i = 2$  to  $n$ 
2       $key = A[i]$ 
3      // Insert  $A[i]$  into the sorted subarray  $A[1 : i - 1]$ .
4       $j = i - 1$ 
5      while  $j > 0$  and  $A[j] > key$ 
6           $A[j + 1] = A[j]$ 
7           $j = j - 1$ 
8       $A[j + 1] = key$ 

```

Algorithm 1: Test

REFERENCES

- [1] M. Goossens, F. Mittelbach, and A. Samarin, *The LaTeX Companion*. Reading, Massachusetts: Addison-Wesley, 1993.
- [2] G. D. Greenwade, “The Comprehensive Tex Archive Network (CTAN),” *TUGBoat*, vol. 14, no. 3, pp. 342–351, 1993.

APPENDIX A COMPILING IN DRAFT

You can also compile the document in draft mode. This shows todos, and increases the space between lines to make space for your supervisors feedback.