Notes and Thoughts on Implementing Windowed-Multipole through Vector Fitting

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Contents

1 Introduction

This document demonstrates various LaTeX features including cross-references, hyperlinks, equations, figures, and citations. This is a sample introduction that references Section 2 and Figure 1.

You can create hyperlinks to external websites like The LaTeX Project or Overleaf.

2 Mathematical Equations

Here are some examples of numbered equations that will be automatically numbered:

$$ax^2 + bx + c = 0 \tag{1}$$

The solutions to Equation (1) are given by the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{2}$$

You can also have multi-line equations:

$$f(x) = x^2 + 2x + 1 \tag{3}$$

$$= (x + 1)^2 \tag{4}$$

As shown in Equation (4), the expression can be factored.

For inline math, you can write $E = mc^2$ or $\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$.

3 Figures and Images

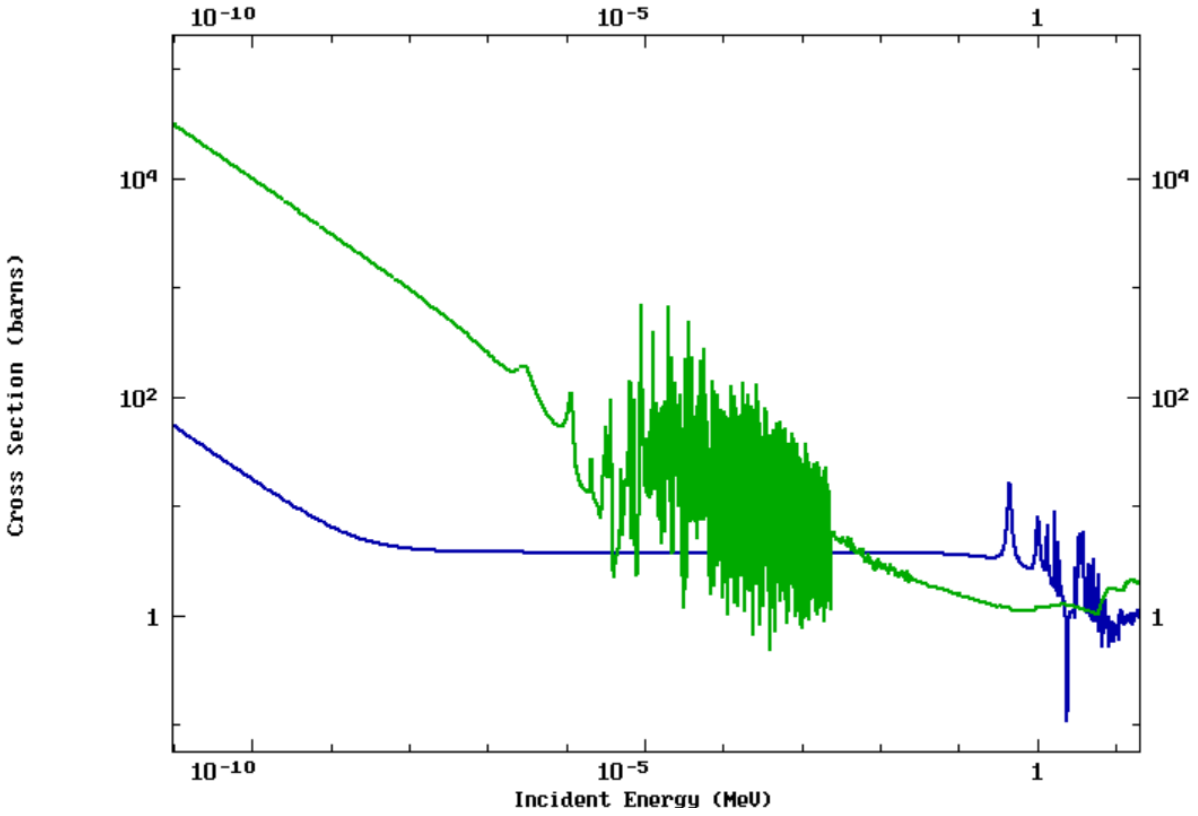
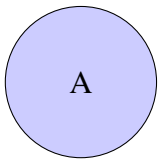


Figure 1: This is a sample figure demonstrating figure inclusion.

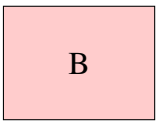
As you can see in Figure 1, figures are automatically numbered and can be cross-referenced throughout the document.

3.1 Multiple Subfigures

You can also create subfigures:



(a) First subfigure



(b) Second subfigure

Figure 2: Example of subfigures with a showing a circle and b showing a rectangle.

4 Tables

Table 1: Sample data table

Parameter	Value	Unit
Temperature	25.4	°C
Pressure	101.3	kPa
Humidity	65	%

The data in Table 1 shows typical environmental conditions.

5 Citations and References

You can cite references using various styles. For example, you might reference a seminal paper (Einstein 1905) or discuss the work of Newton (1687).

Multiple citations can be grouped together (Einstein 1905; Newton 1687).

6 Cross-References and Hyperlinks

This document demonstrates several types of cross-references:

- Section references: Section 1, Section 2
- Equation references: Equation (1), Equation (2)
- Figure references: Figure 1, Figure 2
- Table references: Table 1

External links include:

- CTAN - The Comprehensive TeX Archive Network
- TeX Stack Exchange
- Detexify - LaTeX symbol recognition

7 Code and Listings

You can include code snippets:

Listing 1: Sample Python code

```
def hello_world():
    print("Hello, World!")
    return True

if __name__ == "__main__":
    hello_world()
```

8 Conclusion

This boilerplate document provides a solid foundation for academic and technical writing with LaTeX. It includes all the essential packages and examples for the features you requested.

References

Einstein, Albert (1905). “Zur elektrodynamik bewegter körper.” In: *Annalen der physik* 17.10, pp. 891–921.

Newton, Isaac (1687). *Philosophiæ naturalis principia mathematica*. Jussu Societatis Regiæ ac Typis Joseph Streater.