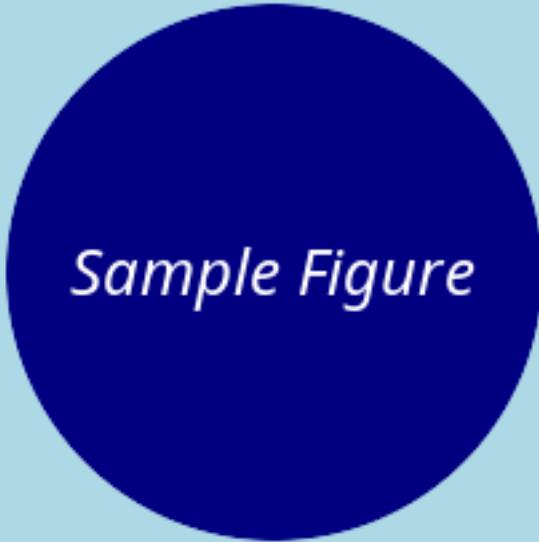


# Graphical Abstract

## A Sample Article for Elsevier CAS Template

Alan Lujan, Jane Doe



## Highlights

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- MyST Markdown enables reproducible scientific writing
- Seamless export to multiple journal formats
- Support for both single and double column layouts

# A Sample Article for Elsevier CAS Template

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## ARTICLE INFO

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## ABSTRACT

This is a sample article demonstrating the use of MyST Markdown with Elsevier's CAS templates. The template supports both single-column and double-column layouts, making it suitable for various Elsevier journals. We demonstrate the key features including author metadata, affiliations, keywords, and structured content.

## 1. Introduction

This document demonstrates the integration of MyST Markdown (Cockett, Purvis and others, 2023) with Elsevier's CAS templates. MyST provides a powerful authoring experience while maintaining compatibility with traditional LaTeX journal requirements (Lamport, 2004).

### 1.1. Background

Scientific publishing has traditionally relied on LaTeX for high-quality typesetting (Smith and Doe, 2020). However, the learning curve and complexity of LaTeX can be a barrier for many researchers. MyST Markdown bridges this gap by providing:

1. A familiar Markdown syntax based on CommonMark (Gruber, 2004)
2. Rich scientific features (equations, citations, cross-references)
3. Export to multiple formats including PDF via LaTeX

Reproducible research workflows have become increasingly important, with tools like Jupyter Notebooks (Kluyver, Ragan-Kelley and others, 2016) enabling literate programming approaches.

## 2. Typography Features

This section demonstrates MyST Markdown typography features and how they render in the PDF output.

### 2.1. Inline Formatting

Standard inline formatting includes **bold text**, *italic text*, and `inline code`. You can also use ~~strikethrough text~~ and underlined text for special emphasis.

For chemical formulas, use subscripts: H<sub>2</sub>O, CO<sub>2</sub>. For ordinals, use superscripts: the 4<sup>th</sup> of July, 1<sup>st</sup> place.

### 2.2. Quotations

Block quotes are useful for highlighting important passages:

We know what we are, but know not what we may be.

**Figure 1: \***

William Shakespeare, Hamlet

### 2.3. Definition Lists

MyST supports definition lists for glossaries or term explanations:

**MyST** Markedly Structured Text, a markdown flavor for scientific writing

**LaTeX** A document preparation system for high-quality typesetting

**jtex** A Jinja-based templating system for LaTeX documents

### 2.4. Footnotes

MyST supports footnotes<sup>1</sup> which are automatically numbered and placed at the end of the document. You can have multiple footnotes<sup>2</sup> throughout your text.

### 2.5. Task Lists

Task lists can track progress (rendered as bullet points in LaTeX):

- Create template structure
- Add typography examples
- Submit to journal

## 3. Proofs and Theorems

MyST supports formal mathematical environments using proof directives. These are essential for mathematical and theoretical papers.

<sup>1</sup>This is a footnote demonstrating the feature. Footnotes can contain **formatted text** and even `code`.

<sup>2</sup>Another footnote with additional information.

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### 3.1. Definitions and Theorems

**Definition 3.1** (Convergent Sequence). A sequence  $(a_n)$  in  $\mathbb{R}$  is said to be convergent if there exists a number  $L \in \mathbb{R}$  such that for every  $\varepsilon > 0$ , there exists  $N \in \mathbb{N}$  such that for all  $n > N$ :

$$|a_n - L| < \varepsilon \quad (1)$$

We write  $\lim_{n \rightarrow \infty} a_n = L$ .

**Theorem 3.1** (Squeeze Theorem). Let  $(a_n)$ ,  $(b_n)$ , and  $(c_n)$  be sequences such that  $a_n \leq b_n \leq c_n$  for all  $n \geq N_0$ . If

$$\lim_{n \rightarrow \infty} a_n = \lim_{n \rightarrow \infty} c_n = L \quad (2)$$

then  $\lim_{n \rightarrow \infty} b_n = L$ .

### 3.2. Proofs and Corollaries

*Proof.* Let  $\varepsilon > 0$  be given. Since  $a_n \rightarrow L$  and  $c_n \rightarrow L$ , there exist  $N_1, N_2 \in \mathbb{N}$  such that:

- $|a_n - L| < \varepsilon$  for all  $n > N_1$
- $|c_n - L| < \varepsilon$  for all  $n > N_2$

Let  $N = \max\{N_0, N_1, N_2\}$ . For  $n > N$ , we have:

$$L - \varepsilon < a_n \leq b_n \leq c_n < L + \varepsilon \quad (3)$$

Thus  $|b_n - L| < \varepsilon$ , completing the proof.  $\square$

**Corollary 3.1.1.** If  $(b_n)$  is squeezed between two sequences converging to zero, then  $b_n \rightarrow 0$ .

### 3.3. Lemmas and Remarks

**Lemma 3.2** (Triangle Inequality). For all  $x, y \in \mathbb{R}$ , we have  $|x + y| \leq |x| + |y|$ .

**Remark 3.1.** The proof directives (Definition 3.1, Theorem 3.1) are automatically numbered and can be cross-referenced throughout the document.

## 4. Methods

We use the standard CAS template structure provided by Elsevier, adapted for use with the `jtex` templating system.

### 4.1. Mathematical Content

The templates support full LaTeX math. For example, the quadratic formula:

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

And inline math like  $E = mc^2$ . Equations can be cross-referenced: see (4).

### 4.2. Tables

MyST tables convert cleanly to LaTeX:

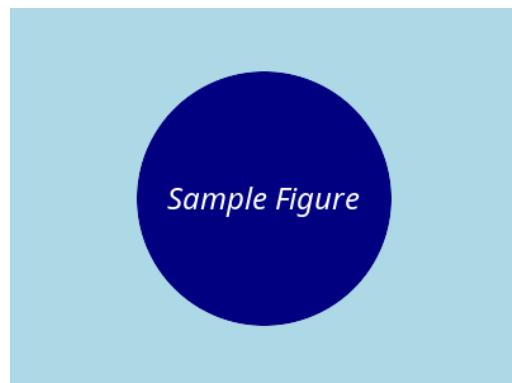
Method	Accuracy	Speed
Baseline	85.2%	Fast
Proposed	<b>92.1%</b>	Medium
Oracle	98.5%	Slow

: Comparison of different methods {#tbl:comparison}

## 5. Results

The template successfully renders:

- Author information with ORCID
- Multiple affiliations
- CRediT author contributions
- Keywords
- Abstract and highlights
- Full document content



**Figure 2:** A sample figure demonstrating image support in the template. This figure shows a placeholder image that would typically contain research results or visualizations.

As shown in Figure 2, the template properly handles figure placement and captions.

## 6. Discussion

This approach enables researchers to write in MyST Markdown while producing publication-ready documents that meet Elsevier's submission requirements.

## 7. Conclusion

The Elsevier CAS MyST template provides a modern workflow for scientific writing while maintaining compatibility with traditional journal submission systems.

## Appendix

### A. Supplementary Methods

This appendix provides additional methodological details that support the main text.

#### A.1. Data Processing

The data was processed using standard procedures as described in the literature.

### B. Additional Tables

Parameter	Value	Unit
Alpha	0.05	-
Beta	1.23	m/s
Gamma	456	kg

### CRediT authorship contribution statement

**Alan Lujan:** Conceptualization, Methodology, Software. **Jane Doe:** Validation, Writing – review editing.

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