Advanced AIAA Technical Conference Paper Template

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This is the advanced LaTeX template of an AIAA technical conference paper. It is intended to demonstrate advanced LaTeX capabilities for producing an AIAA technical conference paper. Fundamental topics are covered in the bare-bones template. For detailed AIAA layout and style guidelines, please refer to the AIAA LaTeX Package Users Manual, `aiaa.pdf`.

Nomenclature

F	Force, N
f	Residual value vector
J	Jacobian Matrix
m	Mass, kg
x	Variable value vector

Subscripts

i	Variable number

Symbols

α	Acceleration, m/s^2
Δx	Variable displacement vector

I. Introduction

THIS is an example of a dropped capital letter at the beginning of a paragraph using the `lettrine` package. This package is usually included with the more comprehensive TeX distributions, but those with more trim installations may need to retrieve this package from the Comprehensive TeX Archive Network (CTAN), which is located at www.ctan.org. This package does not gracefully handle the AIAA class' `submit` option. AND this is an example of a dropped capital letter at the beginning of a paragraph using the `dropping` package. This package is a bit less refined than the `lettrine` package, but some authors may already have it around if they used the old (unofficial) LaTeX AIAA distribution. This package accommodates the AIAA class' `submit` option.

In an effort to more tightly integrate text and image, the `wrapfig` package is employed. This package works by modifying paragraph shape to accommodate a figure (or a table or other items). Typically one inserts its `wrapfigure` or `wraptable` environment just before the paragraph in which it is to be placed. Also specified is the width of the item to be inserted and the placement, for example, left or right side. (This package does not provide for center placement.) The rest of this paragraph is filler so that the `wrapfigure` example will be placed in this paragraph. Documentation of the `wrapfigure` package is available at the end of the style file itself (check the package loading lines shown during LaTeX processing to find its location).

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Code listings and other such artifacts can be typeset in a large variety of styles by using the `fancyvrb` package.

```
1   def testCircularAdvection
2    position.each_index do |i|
3     @position = position[i]
4     assert_equal speed[i], waveSpeed
5    end
6   end
```

Tables with footnotes, such as table 1 on page 4, can be coded using the `threeparttable` package. Note: This table was purposely placed on another page through the use of the `[p]` placement specifier to demonstrate the automated page reference mechanism provided by the `varioref` package. Of course, one would normally have the table integrated into the text that describes it.

Equation (1) is serving as a demonstration of the `nomenclature` package.

$$\mathbf{J}_i \cdot \Delta \underline{x}_{i+1} = -\underline{f}_i \tag{1}$$

The same can be said for Eq. (2) that uses α to add another Greek letter to the mix.

$$F = m\alpha \tag{2}$$

The `nomencl` package is fed entries with the `\nomenclature` command. These entries are then collected and sorted using `makeindex`. The optional sorting argument to the `\nomenclature` command uses a key of 'b' for subscripts, 'g' for Greek symbols, 'c' for conventions, and 't' for superscripts.

When many figures share a similar style and beg to be compared to one another, the `subfigmat` and `subfigure` packages can be used to create a matrix of subfigures as shown by figure 2. These are called

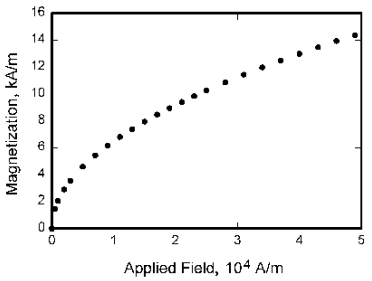
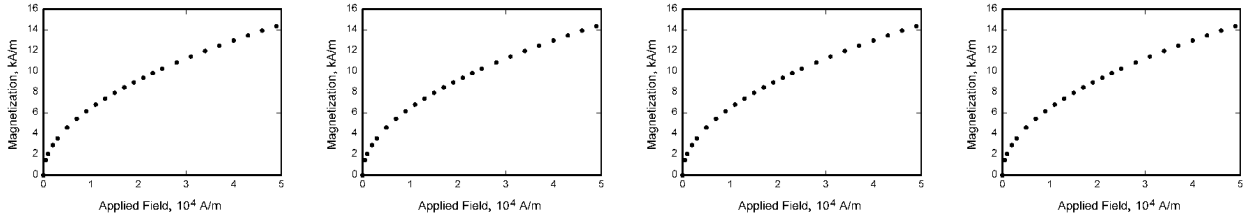
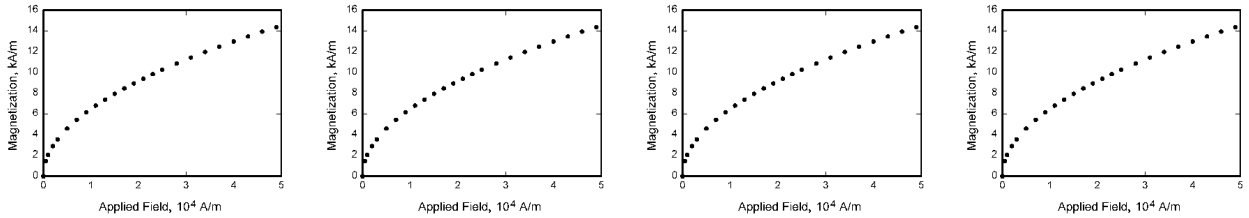


Figure 1. Magnetization as a function of applied field.



(a) 2 AM. (b) 3 AM. (c) 4 AM. (d) 5 AM.



(e) 6 AM. (f) 7 AM. (g) 8 AM. (h) 9 AM.

Figure 2. A time series shown of magnetic field that does not change because we are using the same figure each time.

"small multiples" by Tufte.[1]

II. Conclusion

This had been a brief example of some of the more advanced options available for LaTeX. Please see the documentation for each package for extended discussion or usage.

References

[1]Tufte, E. R., *The Visual Display of Quantitative Information*, Graphics Press, 1983.

Table 1. This is an example of a `threeparttable` which uses the `dcolumn` package to allow for columns to be aligned on decimal points.

First head*	Second head	Third head	$V_M(r)$
center	doctor	0.2	10.55
tab	dentist	0.15	33.12
worse	man†	10.58	45.10
better	home	43.9	12.34

* This is a table footnote, which to span multiple lines, has been greatly extended in length contrary to reason.

† A much shorter table footnote.