

This is a sample file in the text formatter L<sup>A</sup>T<sub>E</sub>X. I require you to use it for the following reasons:

- It produces the best output of text, figures, and equations of any program I’ve seen.
- It is machine-independent. It runs on Linux, Macintosh (see TeXShop), and Windows (see MiKTeX) machines. There are web-based versions, <https://www.overleaf.com>. You can e-mail ASCII text versions of most relevant files.
- It is the tool of choice for many research scientists and engineers. Many journals accept L<sup>A</sup>T<sub>E</sub>X submissions, and many books are written in L<sup>A</sup>T<sub>E</sub>X.

Some basic instructions are given next. Put your text in here. You can be a little sloppy about spacing. It adjusts the text to look good. You can make the text smaller. You can make the text tiny.

Skip a line for a new paragraph. You can use italics (*e.g. Thermodynamics is everywhere*) or **bold**. Greek letters are a snap:  $\Psi$ ,  $\psi$ ,  $\Phi$ ,  $\phi$ . Equations within text are easy— A well known Maxwell thermodynamic relation is  $\left.\frac{\partial T}{\partial P}\right|_s = \left.\frac{\partial v}{\partial s}\right|_P$ . You can also set aside equations like so:

$$du = T ds - P dv, \quad \text{first law.} \quad (1)$$

$$ds \geq \frac{\delta q}{T}. \quad \text{second law.} \quad (2)$$

Eq. (1) is the first law. Eq. (2) is the second law. References<sup>1</sup> are available. If you have a postscript file, say `sample.figure.eps`, in the same local directory, you can insert the file as a figure. Figure 1, below, plots an isotherm for air modeled as an ideal gas.

Figure 1: Sample figure plotting  $T = 300$  K isotherm for air when modeled as an ideal gas.

### Running L<sup>A</sup>T<sub>E</sub>X

You can create a L<sup>A</sup>T<sub>E</sub>X file with any text editor (`vi`, `emacs`, `gedit`, etc.). To get a document, you need to run the L<sup>A</sup>T<sub>E</sub>X application on the text file. The text file must have the suffix “`.tex`” On a Linux cluster machine, this is done via the command

```
latex file.tex
```

This generates three files: `file.dvi`, `file.aux`, and `file.log`. The most important is `file.dvi`.

The finished product can be previewed in the following way. Execute the commands:

```
dvipdf file.dvi
```

*Linux System*

This command generates `file.pdf`, which can be viewed with many standard tools. Alternatively, you can use TeXShop on a Macintosh or MiKTeX on a Windows-based machine. *Another very good and modern option is the web-based* <https://www.overleaf.com>. The `.tex` file must have a closing statement as below.

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<sup>1</sup>Lamport, L., 1986, *L<sup>A</sup>T<sub>E</sub>X: User’s Guide & Reference Manual*, Addison-Wesley: Reading, Massachusetts.