

# L<sup>A</sup>T<sub>E</sub>X Template for Wireless Foundations Conference Posters v0.1



Anand D. Sarwate

Wireless Foundations

Department of Electrical Engineering and Computer Sciences, University of California, Berkeley

## Introduction

- The goal of this template is to give the conference posters from Wireless Foundations a uniform “look-and-feel.”
- The source that created this document is a good place to start if you are trying to make a conference poster or just want to play around with the layout.
- Since there are very few WYSIWYG L<sup>A</sup>T<sub>E</sub>X editors, using this template will necessarily involve a lot of pre-viewing and manually resizing the boxes. The advantage is that your formulas and so on will look beautiful. The disadvantage is that it takes much longer.

## Mathematics

Mathematical typesetting is the same as it is in L<sup>A</sup>T<sub>E</sub>X. In particular, all the math symbol packages and so on should work just fine, although you may have to line-break some formulas. By re-rendering the page you can see where the layout is going to be tricky.

## Theorems and propositions

These work just the way they do in regular L<sup>A</sup>T<sub>E</sub>X :

**Theorem 1 (Sphere-Packing Bound)** For any  $(N, R)$  code on a discrete memoryless channel,

$$P_e \geq \exp(-N\{E_{sp}[R - o_1(N)] + o_2(N)\}), \quad (1)$$

where

$$E_{sp}(R) = \sup_{\rho > 0} \left[ \max_{\mathbf{Q}} E_0(\rho, \mathbf{Q}) - \rho R \right] \quad (2)$$

and  $E_0(\rho, \mathbf{Q})$  is given by

$$E_0(\rho, \mathbf{Q}) = -\ln \sum_{j=0}^{J-1} \left[ \sum_{k=0}^{K-1} Q(k) P(j|k)^{1/(1-\rho)} \right]^{1+\rho}. \quad (3)$$

The quantities  $o_1(N)$  and  $o_2(N)$  go to zero with increasing  $N$  and can be taken as

$$o_1(N) = \frac{\ln 8}{N} + \frac{K \ln N}{N} \quad (4)$$

$$o_2(N) = \frac{\ln 8}{N} + \sqrt{\frac{2}{N} \ln \frac{e^2}{P_{\min}}} \quad (5)$$

where  $P_{\min}$  is the smallest nonzero transition probability for the channel and  $K$  is the size of the input alphabet.

## Citations

Citations can be done in using the `\cite` command. For example we should really attribute the above theorem to Gallager [1].

- If you use BIBTeX, then you can use the same `.bib` file for the citations as you did for the original paper.
- In some cases, using end-notes may not be a good idea for posters because you don't want to use valuable poster space for bibliographies.

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

If you need to brush up your L<sup>A</sup>T<sub>E</sub>X knowledge of basic commands, layout, and so on, I recommend the book by Lamport [2]. Other resources can be found online. This poster format is based on one by Rob Kumon. It has been modified to avoid being tied to ISO paper formats (A0, ... A4, ...), which are not widely used in the US.

## Layout Details

This template for posters creates boxes of information and then physically places them on the poster page. Because there is no way to tell how large a chunk of text/images will take up, a lot of tweaking of the final layout is required. I think that the professional output that you get is worth the time invested.

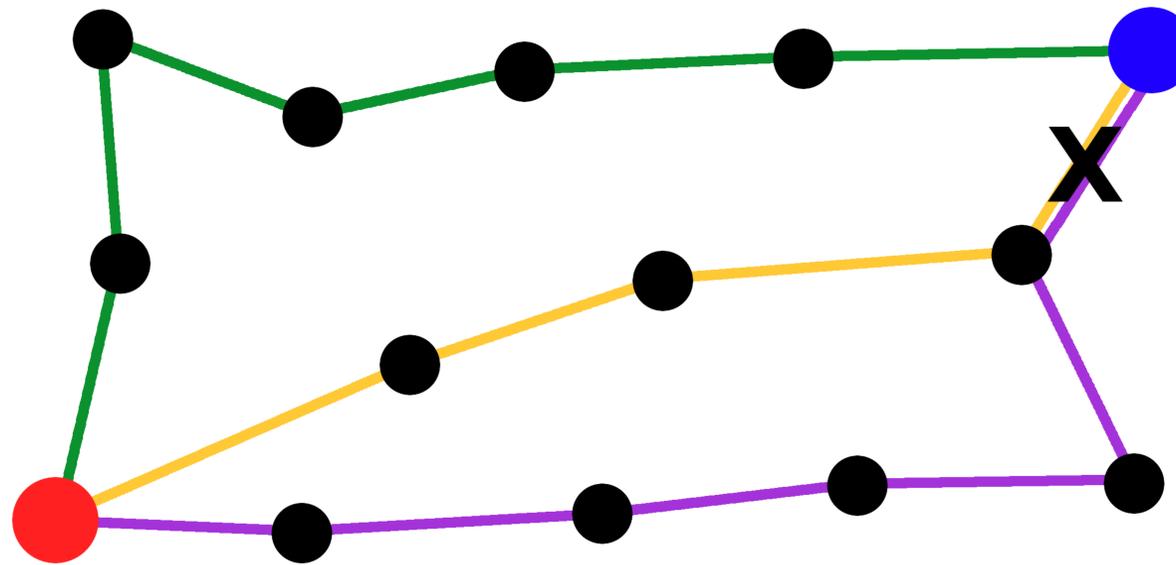
The entire poster is divided into a grid of equal cell spaces. This is only a convenience – boxes can be placed arbitrarily within the poster, but a coordinate system helps users organize their information. For example, this document uses a 46 cell wide and 26 cell tall grid. The columns are 10 cells wide with a 2 cell spacer between columns. To get more arbitrary placement, you can use a finer grid or specify decimal coordinates. The top left corner of the poster is  $(0, 0)$ .

Once you have made a logical division of the material that is to go into the poster, you can put those divisions into separate `textblock` environments. These have two arguments – the width in cells and the position in the grid of the top left corner of the block. You can then place all of your blocks and move them around so that they fit in the space provided.

## Making a poster backup

The `textblock` environments here transfer easily to slide presentation packages for L<sup>A</sup>T<sub>E</sub>X, such as `prospcr`, `beamer`, and `slitex`. Since the layout of the poster in this document is a logical one, you can simply mimic that in your favorite slidemaking package to obtain letter-sized sheets to use as a backup in case this poster is missing, damaged, incorrectly-sized, etc.

## Figures can also span multiple columns



## How to include graphics

Graphics can be included using the `\includegraphics` command, for which you need to include the `graphicx` package. You can also use another graphics package if you like.

- Note that in L<sup>A</sup>T<sub>E</sub>X it is difficult, if not impossible, to use both `.eps` and `.jpg` files in the same file.
- If you use only `.ps` and `.eps` files, you should convert the `.tex` to `.dvi` and then the `.dvi` to `.ps` using `dvips`. Then you can convert the `.ps` to `.pdf` using `ps2pdf`.
- If you are using `.jpg` and `.pdf` images, you can convert straight to `.pdf` using `pdflatex` or another program.

## Getting Started

I suggest reading this template first and getting a feel for how the layout works. Then, decide on the *logical* formatting of your poster – what groupings of information do you want, and how should they relate to one another? Then you can start playing around with the layout. Keep in mind that the border and background color options that are in this template use `psstricks` and thus will not play well unless you use the PostScript rendering path.

## References

- [1] R. G. Gallager. *Information Theory and Reliable Communication*. John Wiley & Sons, New York, 1968.
- [2] L. Lamport. *LaTeX: A Document Preparation System*. Addison Wesley, New York, 1994.