Bridges Conference Proceedings Guidelines:
A LaTeX Template for Your Paper

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Abstract

We present a working self-referential sample of how a Bridges Conference paper should be formatted, using the LaTeX typesetting system. Abstracts such as this should be formatted in a 9 point Times Roman font, be right- and left-justified, and have margins inset from those of the main paper. Your abstract should be only one paragraph, comprising anywhere from three to eight lines of text—the shorter the sweeter. Abstracts will function independently from the rest of the paper so is a good idea to avoid footnotes and citations. Abstracts are easier to deal with as plain text so avoid unnecessary formatting and symbols.

Introduction

You, the author of a Bridges Conference paper, are responsible for the final typeset version that will be printed in the Proceedings and duplicated on the CD-ROM accompanying the Proceedings. Therefore, we the editors ask that you prepare your paper according to the guidelines described here.

There are two versions of these guidelines, the one you are reading is for LaTeX users[1]. But there is another version for word processor users. If you are not familiar with LaTeX, check out the Microsoft Word version of the Bridges Guidelines available for download at http://www.bridgesmathart.org. Otherwise, use the free LaTeX typesetting system [4] to make your paper look its very best, especially if it has any substantive amount of mathematical formulæ in it.

In either case, however, you *will be required* to submit your paper as a single PDF (Portable Document Format) file whose layout is essentially the same as described here. If you have problems creating a PDF version, please advise the editors as soon as possible so that we can help you.

Uniformity, clarity, and neatness of style enables the editors to create a professional-looking copy of the Proceedings. Therefore, the document styles described herein must be adhered to carefully, because otherwise too much work is placed upon the volunteers who must put the Proceedings into book form prior to the Conference. *Substantive variations from the styles described here are grounds for rejecting your paper, regardless of its astoundingly brilliant, iconoclastic, artistic, and/or ground-breaking content.*

Writing Style

Authors ... are encouraged ... by their readers ... to avoid ... the somnambulent ... passive voice ... as much as ... possible ... zzzzz. It is perfectly acceptable to use the first person "I" when talking about one's own artistic endeavors, and the inclusive, academic "we" works for more formal needs.

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[1] The LaTeX template files responsible for the PDF you are currently reading are available for download on the Bridges website at http://www.bridgesmathart.org. Please get the latest version for the current year as the guidelines will change over time.

Page Size, Numbering, Margins, and Justification

Use a template. Use a copy of this document as a template. It will correctly set the paper size, margins, and all other styles for you. Replace this text with your text.

Paper size. We will print papers using US Letter size (8.5 × 11 inches) (21.59 × 27.94 cm). If you are working outside North America, please check that you have *not* used a different paper size such as A4.

Page numbers. *Do not insert page numbers or headers or footers in your paper.* At this stage, neither you nor the editors know where in the Proceedings your paper will be placed. Sequential page numbers will be added later on at the publishing stage.

Page limits. Except in special circumstances where the editors have informed you otherwise, you must limit your paper to eight pages for regular and workshop papers, and to four pages for short papers. If your submission is longer than these limits the editors will ask you to shorten it, or they may reject the paper outright, or if not, you may be asked to provide funds to help pay for your extra length.

Even length. The Proceedings will be a bound book. Every paper will begin on an odd-numbered, right-hand page. If your initial draft comes in at an odd number of pages, it will end with an entire blank page just prior to the next paper after it. So please work to fill your paper out to an even number of pages, by adding an illustration or fleshing out some part of the exposition. Either that, or cut it down to an even six or four pages.

Layout. Your paper should conform to the following specifications to ensure that all papers have uniformity of appearance in the Proceedings. A "`bridges.sty`" file should be in the same folder or directory as your paper. Ensure that you have included the command \usepackage{bridges} near the top of your paper's `.tex` file (as the source code for this template file does). This presets the Bridges paper styles and margins and other settings for you automatically.

1. On the first page, the distance from the top edge of the paper to the title should be 3 cm (1 3/16 inches).

2. On the second and subsequent pages, the distance from the top edge of the paper to the top of the first line of type should be 2.5 cm (1 inch).

3. For all pages, the distance from the left edge and right edge of the paper to the left and right margin of the type should be 2.5 cm (1 inch).

4. On the first page, the paragraph containing the abstract text should have left and right margins of approximately 3.5 cm (1 3/8 inches).

5. The distance from the bottom of the last line of type on the page to the bottom edge of the paper should be no less than 2.5 cm (1 inch). For all but the last page, strive to make this distance as close to 2.5 cm (1 inch) as possible. The final line or figure of your paper can end anywhere on the last page.

6. There should be a small amount of vertical space (5 pt) between adjacent paragraphs. This enhances readability. But don't bother if you cannot accomplish this in a subtle manner; an entire blank line is too much.

Justification. You should justify the text of your paper to both the left and right margins. Ragged right edges do not conform to our house style. Unlike the other paragraphs in this template file, this paragraph you are currently reading has a ragged right edge and is *not* properly justified.

Paragraphs. With the exception of the first paragraph in any section, you should indent the first line of every paragraph by approximately .3 inch (.75 cm). Leave the first paragraph of any section left-justified. But if you are using initial, short, boldface sub-heading phrases—as we are in this section—don't indent paragraphs beginning with those boldface sub-headings. The boldness is sufficient warning to the reader that a new thought is arriving.

If you are not using LaTeX, use two blank lines between the end of the paragraph and the next major heading; use one blank line between the major heading and the immediately following first paragraph.

Text Font and Sizes

Your paper should be single-spaced in 11 pt "Times-Roman," "Times New Roman," or similar Times-family font. Some technical formatting programs print mathematical formulas in *italic* type, with subscripts and superscripts in a slightly smaller font size. This is acceptable. If you use LaTeX and its math typesetting apparatus, all of this is taken care of for you.

Your paper's title should be centered across the top of the first page and should be in 16 pt "Times-Roman" or similar.

The author name(s) and address(es) should be centered below the title, using 12 pt type. Below the names, any address information should be centered on as few lines as possible. You can place on a single line address fields that normally would appear on separate lines, as long as you separate them with a comma. All of this is demonstrated on the first page of this template paper above.

An e-mail address is optional. Furthermore it should only be provided if you are confident you will be reachable at it for at least several years into the future. Place it centered below the address information, formatted in a `typewriter` typeface, also shown above. In LaTeX, the `url` package has a command `\url{}` to accomplish this; you can also just use a typewriter font, as in `{\tt ... }`.

The reference section should be in 11 pt font like the rest of the paper. If youre really pressed for space, you may try a 10 pt font, but do not go any smaller.

For emphasis, use italics. Do not use color or boldface. The proceedings are printed in black and white, and boldface is reserved for titles, headings, and sub-headings.

Each figure in your paper should be captioned and numbered sequentially using the word Figure and a number, all in bold 11 pt text, not italic. Center all captions, just below each figure. The text explaining the figure should be in 11 pt *italic*. See Figure 1 below for an example.

Title and Headings

Paper title. Your paper's title should be as short and snappy as possible, with just enough information to get the reader interested. Strive to make it just one line if at all possible, two lines at the maximum.

Section headings. Center your major headings, and use a bold 12 pt. font, without underlining. Avoid numbering sections unless you are referring within the text from one section to another. For short expositional Bridges papers, such cross-sectional references are rare.[2] Whether you number your sections or not, the last section, **References**, should *not* be numbered. LaTeX normally numbers section headers, so to suppress numbering, use the "`\section*`" variant declaration. The source for this template demonstrates how.

Sub-section headings. Avoid more than two levels of heading: sections and sub-sections should be more than sufficient in a relatively short, illustrated Bridges paper. Placing sub-section headings on their own line wastes a great deal of usually precious space. So if you use two levels, use the style here, where the bold sub-section title begins one or more paragraphs. For example:

Case and punctuation. The title and section headings should use mixed upper and lower case: conjunctions such as "and" or "or" and prepositions such as "of" or "with" begin with a lower case letter, whereas Nouns,

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[2]Numbering suggests a more technical paper, and establishes a hierarchy, but if you have no cross-section references, then section header numbering in just an 8-page paper is more "noise" than it is useful.

Verbs, Adjectives, and Other Important Words begin with an uppercase letter. Avoid most punctuation (one colon or comma is acceptable). Do not end a lone title or section heading with a period.

On the other hand, all non-indented, in-line, boldface sub-section headings should not be more than a few words, should not be long sentences, and should contain no punctuation except for a final period. The period separates the sub-heading from the beginning of the paragraph that follows, as demonstrated in this section. In general, only capitalize the first word of the sub-heading. But if you prefer to use mixed case, which makes the sub-heading stand out a bit more, ensure that you are doing so consistently throughout the paper in all your sub-headings.

Figures and Illustrations

Bridges papers that have illustrations in them have a better chance of being read. So think about illustrating pictorially what you are describing mathematically, even if your subject is time-based music or some other fundamentally non-visual medium.

Positioning. Ideally, you should position each illustration within the text, between paragraphs, on the same page of its first reference, otherwise it should be on a following page. If you can fit two or more figures beside themselves horizontally, it is a more efficient use of space. You could also place your figures to the left and the right of the text (but avoid too much crowding). Since space is usually at a premium, dont scale the figure as large as possible if it can be understood at a smaller size.

Captions. Make sure that you include a caption for each photograph or line drawing. You must number your figures so that you can refer to them in the text.

Figure 1 : *The wireframe church outside Leeuwarden, as seen during Bridges 2008.*

Copyright material. If an illustration is not your own, you need to get the copyright owner's permission for reproduction. In the U.S., anything published before 1923 is okay to copy. If you are thinking of "borrowing" a graphic from a website, *get the owner's permission*. (Though website graphics may not be of high enough resolution for printing.)

Color. The original color illustrations in your PDF paper will appear online and in other electronic copies of your paper, but the Bridges Proceedings are currently printed using a gray-scale rendering of the final

PDF file you submit. If your paper contains color illustrations, it is *very important* that you preview them by printing your paper out on a non-color printer. Sometimes color illustrations can lose too much information, look muddy, or lose contrast when translated to gray-scale. Shades of blue, green and brown generally become indistinguishable in grayscale. In drawings do not use color for emphasis, use line thickness or grayness instead.

Use the proper file format. Photographs from a camera are often JPEG files and these are acceptable. If you are resaving a picture (say after cropping it) take great care that the JPEG output settings are set to the highest quality to avoid (often dramatically ugly) compression artifacts. PNG files are suitable for non photographic images. LaTeX users have the luxury of importing vector image formats such as PDF and this is ideal.

High resolution. It is very important to know the resolution of any non-vector images before they are incorporated into your final PDF file. Otherwise, your pictures may not be legible in the printed Proceedings. If you don't understand the following, or don't know how to find out the required information, then please ask for help. You should aim for a final resolution of at least 300 dpi, and preferably higher. If the picture is being magnified, this means that you also need to take into account the actual size it will be printed. A picture that is 300 by 300 pixels should not be printed in a space larger than one inch square. So for example if you have a picture sized to about 4 inches high in your document, the original must be at least 1200 pixels high in the original incorporated file.

But not too high. We strongly suggest that authors submit papers that are at most 10 MB in size. We often receive many submissions in the 40-50 MB range, containing images that are far larger than they need to be. Remember, when you do decrease the file size, or crop and re-save, never re-save as a JPEG file unless the JPEG output settings are set to the highest quality to avoid ugly artifacts.

Creating Your Final PDF File

Again, if you are in doubt about creating a PDF, ask for help first. If we can't guide you with instructions, we may ask you to send us the original LaTeX files. Keep any incorporated graphics files on hand in case they are also needed.

Using LaTeX, you should be able to get your paper typeset in a final PDF form, using the various PDF-related options that are standard these days.

For word processors on an Apple Mac OS X computer, you can create a PDF file by choosing the PDF option in your viewer's or word processor's standard Print command. TeXShop—among other front-end GUI applications for TeX—does this automatically.

If you are using Adobe's Acrobat program on any platform, there will likely by many more options. If you have many pictures in your paper, make sure the file settings are set to compress the files. Avoid JPEG format for the reasons described above. Also, make sure that the paper size is correct.

When creating PDFs, check the final file in a PDF viewer, particularly: the paper size, whether headings are on the correct page, whether the illustrations are not degraded, and whether color illustrations are still understandable when printed in grayscale.

A Few Typesetting Tips

First, if you are using LaTeX, use your favorite search engine to search the web for "LaTeX Cheat Sheet" [1]. It is invaluable, concise, and available for free in both PDF and LaTeX format. Second, use this file as your template, and read through its source code to see what it does.

Good typesetting has a great many æsthetic subtleties to it. Here are some further helpful hints, gleaned

from the masters, yet still violated in many published math technical papers:

- Look out for "widows". They occur when the last line of a paragraph appears at the beginning of the next page. Similarly, don't let a section title be on a separate page from what follows.

- When your paper uses a short mathematical symbol, such as X_i, and TEX typesets a line starting with X_i (see, right here!), you should precede that `$X_i$` in your source file with a non-breaking space (a ~). This keeps TEX from beginning a line with that lone symbol, making the paragraph more readable. For example, we have cleverly demonstrated in this very paragraph two incorrect word wraps leaving single symbols glaringly at the start of lines 2 and 3. By preceding them with a non-breaking space (a ~), the problem is solved. Check the source for this template file to see how to do this. And this advice applies equally well if your are using a WYSIWYG word processor instead of LATEX.

- If you use a period for any reason other than to end a sentence, and it is followed by a space, it looks better if you use a non-breaking space (a ~). This is because TEX places extra space between sentences, and it assumes that a period followed by a space ends a sentence. Consider the subtle spacing difference between Mr. McGoo and Mr. McGoo (you may have to magnify to see it more clearly). The former, which doesn't use a non-breaking space, looks wrong to the discerning eye. This is particularly important when typesetting names with initials in bibliographies (see below), and when using abbreviations not followed by a comma or other punctuation.

- The same goes for spaces after colons: if you don't follow them with a non-breaking space (for example, `colons:~if`, as we have done here in this sentence), there will be a tad too much space after them, especially when using right justification. You can use this technique in titles and section headers containing a ':' also.

- Don't use *italic* or **bold** typeface (or ***both***) for emphasis. Use the LATEX `\emph{}` command instead. Its default behavior is to use *italic*.

- When you want to set off some text—like this—for emphasis, use em dashes without any surrounding spaces. In TEX, three hyphens in a row (`---`) is an em dash. Don't use a single- or double–hyphen (en dash) in this situation. Double hyphens (`--`) are dashes used in, e.g., bibliography page or other numerical ranges, such as from 1–8, but not 1-8.

- Use typographic open and close, 'single-' or "double-quotes." Avoid the computery ". In LATEX, an open double-quote is signified by ` ` (two single reverse apostrophes), and its matching closing double-quote is signified by '' (two single quote marks), surrounding what you want quoted. If you are using a word processor on the Macintosh computer platform that doesn't automatically translate computer quotes into typographic quotes, open and close double-quotes are available using Option-[for " and Shift-Option-[for ", and Option-] for ' and Shift-Option-] for '.

Citations and References

Most Bridges paper submissions have had incorrectly or sloppily formatted bibliographies in the final references section. This means that the reviewers for nearly all papers have to spend time explaining how to make it look better and consistent with other papers. So here are some tips to follow that will help:

When citing references in the text of your paper, the corresponding number of your reference should appear in square brackets, e.g., [1]. These should all be citations to numbered items in your bibliography.

A reference should be parenthetical. For example, do this: "This was explained by Chang [1]." but dont do this: "See [1]".

The final section of your paper contains this bibliography: a list of the scholarly references—especially any previous or related work of others—that you are aware of and are pertinent, that you rely and build

upon, or from which you are distinguishing your work. Primary and permanent sources are your friend. In decreasing order of importance and authority, these are: books, published papers in peer-reviewed journals, magazine articles (with date of publication), private correspondence, graffiti, fortune cookies, and most internet websites (some are acceptable, such as `http://www.oeis.org`, as of Jan. 8, 2012).

Papers (like this template) whose bibliographies are essentially lists of website URLs are considered *highly suspect* from a scholarly point of view. Wikipedia references will be frowned upon by reviewers, although good Wikipedia entries often have their own list of references that might be primary and worth citing (after you've read them and deem them pertinent). Nonetheless, if you must reference a URL in cyberspace, include the date you yourself accessed it from your browser, by appending "(as of Feb. 31, 2010)" or similar. Yes, there are respected mathematical peer-reviewed journals that are published on the web (such as the Electronic Journal of Combinatorics [2]). But they are respected because they also publish an annual print volume.

Ensure that your URLs are correct. A single typographic error in a URL makes it worthless. Either click on each one in your final PDF (if the viewer supports jumping to your browser with it), or copy and paste the URL directly into your web browser to ensure it is working and leads to where you think it leads.

If you are using LaTeX, most of what you need to do to format your references is done automatically using the `\cite{}` mechanism in the body of your paper. You then end the paper with an expressly declared `\begin{thebibliography}` and `\end{thebibliography}` environment, within which you fill out what your `\cite{}` tags refer to. Or for more experienced LaTeX users, you can use `\bibliography{mybib}` to search your BibTeX database (a file called `mybib.bib` in the same folder/directory as your paper's TeX source file) for the cited entries. The source code for this template your are reading right now contains both.

If you are not using LaTeX, place each reference in a paragraph that has been set up in your word processor to have a "hanging indent" and a tab stop, both set at the same position, and wide enough to skip over the bracketed, two-digit number that appears at the start of each "paragraph" in the list. If your reference word-wraps onto the next line, then the start of the line will be automatically indented. This leaves the column of reference numbers easy to scan vertically. For example, consider the following bibliographic entries, which are typical in format of nearly all previous Bridges paper submissions done in word processors:

[9] Thurber, James, "The Day the Bed Fell on My Father", Consolidated Anthology of Children's Stories, vol. 3 (1934).
[10] Einstein, A., "$e = mc^2$ and its Discontents", J. Applied Nuclear Metaphysics, vol. 41 (1946), pp. 741–777.
[11] Plumber, Joe the, "Irregular heterodox orthoplogenies in American election pre-cycles", J. Intermedia Tea Party "Studies", vol. 0.00004 (2010), p. vii.

Notice that it is difficult to see the citation references in brackets. The following reformatting is much better because the reference numbers are vertically aligned in their own column, and thus clearer and easier to find:

  [9] Thurber, James, "The Day the Bed Fell on My Father", Consolidated Anthology of Children's Stories, vol. 3 (1934).
[10] Einstein, A., "$e = mc^2$ and its Discontents", J. Applied Nuclear Metaphysics, vol. 41 (1946), pp. 741–777.
[11] Plumber, Joe the, "Irregular heterodox orthoplogenies in American election pre-cycles", J. Intermedia Tea Party "Studies", vol. 0.00004 (2010), p. vii.

If you are using LaTeX and your references list has more than nine entries in it, make sure you append "{99}" to the start of the bibliography section, as in `\begin{thebibliography}{99}`. This will make the list look better by aligning the start of each entry's text vertically, regardless of whether the cite number has

one or two digits, as shown above for reference [9]. And remember to use a tie, or a non-breaking space ˜, [4], in front of individual citation references, to avoid lines like this one that start with a bracketed citation.

Try to keep items in your references list only to those that you actually cite previously in the body of your paper. Don't just list some books or papers that influenced you and you think everyone should read (such as one by Coxeter [3]), unless there is a specific place in the paper, preferably with page number(s), where it is pertinent to have cited it.

The following is a sample final references section that does not use BIBTEX's database capabilities. You are in charge of ensuring a consistent formatting style for each entry. But there is no need for an accompanying citation database file, `mybib.bib`, and you can include extra information that BIBTEX might not support for a given bibliographic style, such as the extra URL in the reference [2].

References

[1] W. Chang, LATEX Cheat Sheet (2010), `http://www.stdout.org/~winston/latex/latexsheet.pdf` (as of Jan. 8, 2012).

[2] M. Chladný and M. Škoviera, "Factorisation of Snarks", *Electronic Journal of Combinatorics*, 17(1), R32 (2010), `http://www.combinatorics.org/Volume_17/PDF/v17i1r32.pdf` (as of Jan. 8, 2012).

[3] H. S. M. Coxeter, "The non-Euclidean symmetry of Escher's picture Circle Limit III", *Leonardo*, 12 (1979), pp. 19–25.

[4] G. Grätzer, *More Math Into LATEX*, 4th ed. (2007), Springer.

And this is a similar bibliography, as formatted in the `plain` style, using BIBTEX and the accompanying file `mybib.bib`. Obviously, you only want to use one or the other in your paper. Prior to this working, you must typeset your `paper.tex` file to output its citations into the usual TEX `paper.aux` file, then process your `paper.tex` file with BIBTEX to create a `paper.bbl` file, then run `paper.tex` through LATEX again twice to get the final typeset result. For more on BIBTEX, see [5]. Finally, we've included a Bridges paper [6] using a BIBTEX entry taken straight from the Bridges archives as a demonstration of a full Bridges paper citation.

References

[1] Winston Chang. LATEX Cheat Sheet, 2010. `http://www.stdout.org/~winston/latex/` (as of Jan. 8, 2012).

[2] Miroslav Chladný and Martin Škoviera. Factorisation of Snarks. *Electronic Journal of Combinatorics*, 17(1):R32, 2010. `http://www.combinatorics.org/Volume_17/PDF/v17i1r32.pdf` (as of Jan. 8, 2012).

[3] H. S. M. Coxeter. The non-Euclidean symmetry of Escher's picture Circle Limit III. *Leonardo*, 12:19–25, 1979.

[4] George Grätzer. *More Math Into LaTeX*. Springer, 2007.

[5] Oren Patashnik. BIBTEX 101, 1998. `http://www.tug.org/TUGboat/Articles/tb19-2/tb59patash.pdf` (as of Jan 8, 2012).

[6] Saul Schleimer and Henry Segerman. Squares that look round: Transforming spherical images. In Carlo Séquin Douglas McKenna Kristóf Fenyvesi Eve Torrence, Bruce Torrence and Reza Sarhangi, editors, *Proceedings of Bridges 2016: Mathematics, Music, Art, Architecture, Education, Culture*, pages 15–24, Phoenix, Arizona, 2016. Tessellations Publishing. Available online at `http://archive.bridgesmathart.org/2016/bridges2016-15.html`.