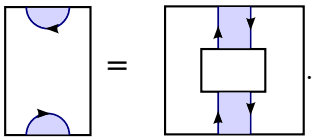
So you want to put complicated diagrams in your latex. Here's what I do. Note: to use my method you have to compile with latex, NOT with pdflatex!!!

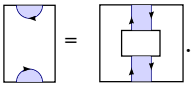
I use a vector graphics program like Inkscape to produce my graphics. Inkscape is free (and also requires downloading XQuartz, on a mac), and saves files with its own (slightly modified) .svg format. I usually keep these files in an svg folder. You can find foobar.svg there, and can modify it for practice.

Then I save the files as .eps files in a separate folder, which I've entitled fig. You can find foobar.eps there. This is the file which is imported into your pdf. Indeed, when you upload to arxiv, you should store the svg files elsewhere, and only upload the eps files. Arxiv is compatible with file structures, so you could zip the whole project up, even with its internal fig folder, and import it to arxiv as one file, no problems.

I've written a modified macro for includegraphics above, which I call ig. It tends to look a little nicer, especially when multiple pictures appear in a line, and is relatively convenient. Here is foobar in its glory.

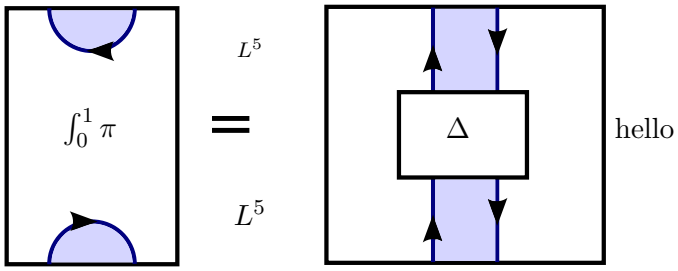


With my macro you can easily rescale it.



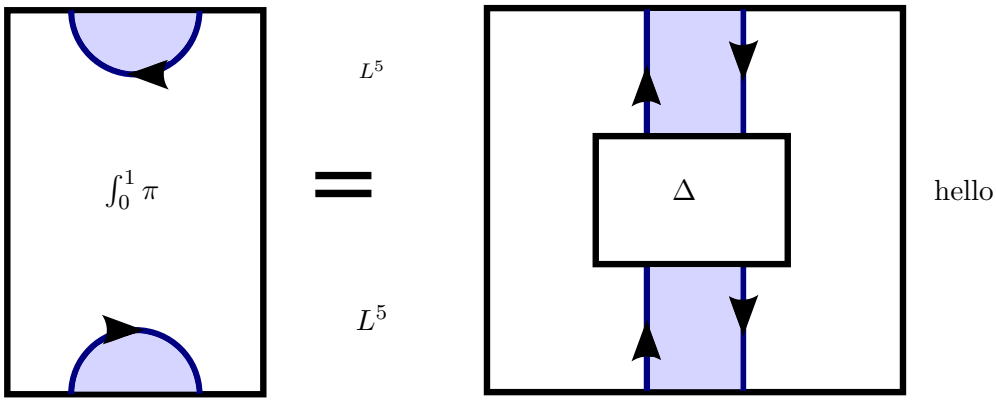
I've purposely done something stupid in this example: I've hardcoded the equal sign as part of the picture, so it doesn't have the right font, and it rescales as you rescale the file. This is bad, and I want to explain how to do better.

(1)



In this picture I've used the pinlabel package to decorate the picture with tex code in specific coordinates. More on finding coordinates later. I added slash tiny to the second L^5 to change the size, very helpful.

Here is equation (1) again, rescaled, and centered, not in a math environment. Note that I didn't change the coordinates at all. The coordinates are rescaled automatically by pinlabel. The actual TeX you include does not change size when you rescale, which is a good thing. Make your diagram big enough so that things fit, just by rescaling.



To reiterate, I should have put the equal sign in this diagram using pinlabel, rather than drawing it with vector graphics or using inkscape's internal text command (which just draws lines ultimately). Better still, I should have made two separate eps files, one with each side of the equality, and done something like

$$\text{ig}\{\text{foobar1}\} = \text{ig}\{\text{foobar2}\}.$$

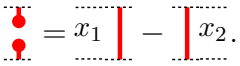
So how do you efficiently get coordinates. Nathan Dunfield wrote an awesome program called labelpin as a companion to pinlabel. In the executable labelpin.exe, I've modified Nathan's original code to use my includegraphics macro and maybe to change the default size.

Add labelpin to your path (google how to do this). Alternatively, add it to the folder where your tex is. Make sure your figures are in the folder fig. Then, from a terminal, execute "labelpin fig/foobar.eps" . This opens a new window with your picture in it. Click several places, where you want the code to go, and then close the window. Now copy-paste the result from your terminal to your file, and you're good to go! You can easily adjust the coordinates later to fine tune the picture. See commented out section in the tex code below.

Note that hello is technically placed outside the bounding box of the picture. Practically, using labelpin I clicked on the far right of the

picture - you can't click outside the bounding box. Then I added 10 to the x-coordinate to have it go outside of the picture.

Something I always recommend when doing diagrammatic calculus is to use dotted lines to indicate the top and bottom (target and source) of the diagram. This also standardizes the side of the file, making it easy to concatenate pictures horizontally! It is worthwhile seeing the code (macros) and the svg and the eps files for the following equation.

(2) 

It's not beautiful, but it works and it is fast! You can make matrices of diagrams easily. You can see a lot of similar diagrams in my paper on arXiv about Gaitsgory's central sheaves. https://arxiv.org/abs/1811.06188