

Linktool Display parameters

The Display Parameters Panel is invoked when you click "Display Parameters" on the Display Controller panel. (See "Displaying a link.") Clicking "Draw" at any time will draw the links with the new parameters set.

Q: *What's the difference between the "Draw" button here and the "OK" button on the Display Controller Panel discussed in "Displaying a Link"?*

A: I'm glad you asked. The "Draw" button is used primarily to test out the new parameters. Thus, if the link buffer has already been displayed at least once, "Draw" will only draw the *last page* of the link buffer. If the link buffer has *not* yet been displayed, "Draw" draws every page, prompting you whether to print it out or not. Also, "Draw" will *not* output anything to 3D files, while "OK" will, if you have the "Output to 3D files" switch set. If you click "OK" instead of "Draw," it will also read the parameters you've set, but will insist on drawing every page.

The parameters, except for the pairs of radio buttons, may be set by either moving the slider or entering numbers directly into the text fields to the right of the sliders. Note that a parameter's maximum and minimum values are determined by the slider; if you enter a number in a text field that is beyond the bounds of the slider, the parameter will be set not to your entered value, but to the closest value the slider can reach to what you've entered.

There are two modes the panel can be in: auto redraw on and off. These modes are toggled with the button on the bottom-middle of the panel. (If it reads "Turn on auto redraw" this means auto

redraw is currently off, and pushing it will turn the mode on—the button will then read "Turn off auto redraw.") When auto redraw is on, it's as if the "Draw" button is pressed every time you adjust any parameter. Thus, if auto redraw mode is on, it's best if you have the texture type set to "Curve" (see "Texture" below) so that the redraws occur quicker. Below is an explanation of the different sections of the panel.

Labels

The left pair of radio buttons determines whether the label, or title, of each link or tangle is to be displayed. The font scale slider adjusts the size of the text of the label. As the font size increases, the size of the link or tangle will decrease.

Texture

Links and tangles can be drawn either with a rope-like texture or a simple thin curve. If you choose "curve," the other parameters in this section are unused.

Amplitude adjusts the amplitude of the partial sine curves used to construct the rope. Thus, the higher the amplitude the wider or thicker the rope will be.

Pixels per cycle determines how many pixels long a cycle of the partial sine curve should be. Thus, for a larger value, the frequency is decreased, and the strands of the rope texture appear stretched out. For a smaller value, they're more bunched together.

Splining

These parameters control values sent to the splining function, which acts to draw the link or tangle with smooth curves, instead of choppy line segments such as in the Edit Window.

" $fff = a*d + b*d^2$ " calculates how far away the control points for the spline should be from the adjacent crossings which are to be splined together. This is done by adding a multiple, a , of the distance between the two crossings, d , and a multiple, b , of the distance between the two points which are $d/2$ away from the two crossings, in the direction the crossings are oriented. (This is rather involved, so if you really care about what all this means, I recommend you check the source code in file "DisplayView.m," in the method "linkdraw::".)

"Crossing separation" calculates how much blank space to put in the under strand so the over strand can fit nicely above it. "Scale" usually doesn't have much of an effect, since "Maximum" is what is almost always used. If you wish to increase the amplitude of the rope texture, it would be beneficial to then increase the maximum crossing separation.

"Number of splining segments" decides how many small line segments to use to break up the space between two crossings. The more segments, the smoother the spline will be. This is usually noticeable when using the rope texture, as a smaller number of line segments causes worse discontinuities in the rope's sine waves.