

KnotPlot Exercise #3: Warping along a knot

Changing the Culture 2000 Workshop

Rob Scharein

28 April 2000

Warping along a knot

This exercise shows you an advanced construction technique in KnotPlot called “warping”. This allows you to create such things as *cabled knots*.

What to do

Start KnotPlot You first should get a copy of the two page handout with a very quick introduction to KnotPlot. If you’re already running KnotPlot, the first thing to do is to type in the command `reset all` or click on the “Reset” button to get KnotPlot into a “fresh state” to start experimenting (you might not always have to do this, but the exercise may not work as expected if KnotPlot is in some weird state).

Give KnotPlot more space to work Type in `allocate 2000`

Pick a nice one component knot Click on the “1” button near the top of the control panel, or use the `load` command.

Make it thin Type in `cyl-rad=.01`

Refine the knot Type in `refine 5`

Install this knot as a “warp path” Type in the commands:

```
double
warp install
reset all
```

Pick a nice torus knot First make thin tubes by entering `cyl-rad=.1` (or use the “cyl-rad” slider). Make a torus knot with 400 beads and a “minor radius” of 0.1:

```
torus 4 44 400 9 .1
```

The first two numbers could almost any positive numbers less than 100 or so. Try different combinations. If the torus knot looks “funny”, try increasing the number of beads from 400 to 1500.

Warp the torus knot about the knot path Enter `warp along`

On the back of this page are some examples of knots created using this technique.

