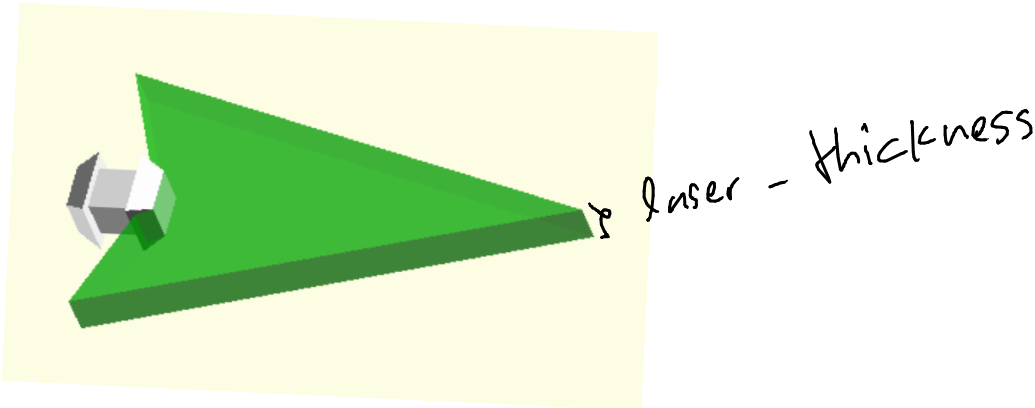
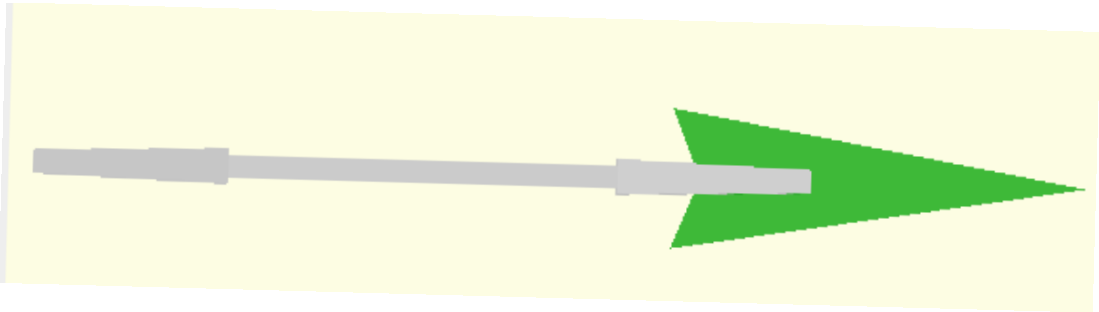
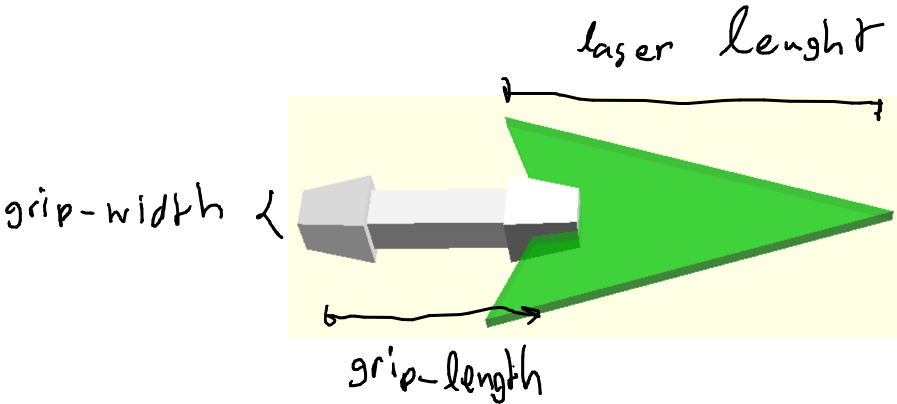
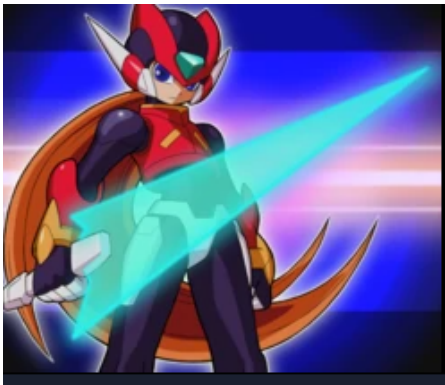


OPENCAD PROJECT

Jan 10, 2021

Model 1: Z-saber

```
zsaber(grip_length ,grip_width ,laser_length ,laser_thickness );
```

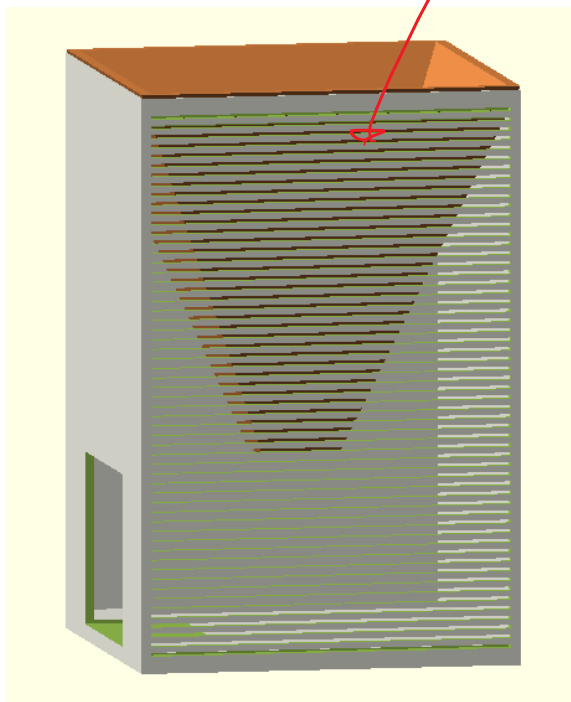
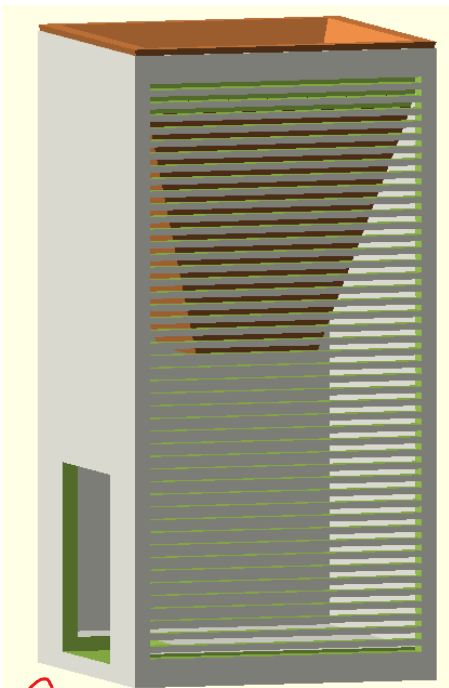
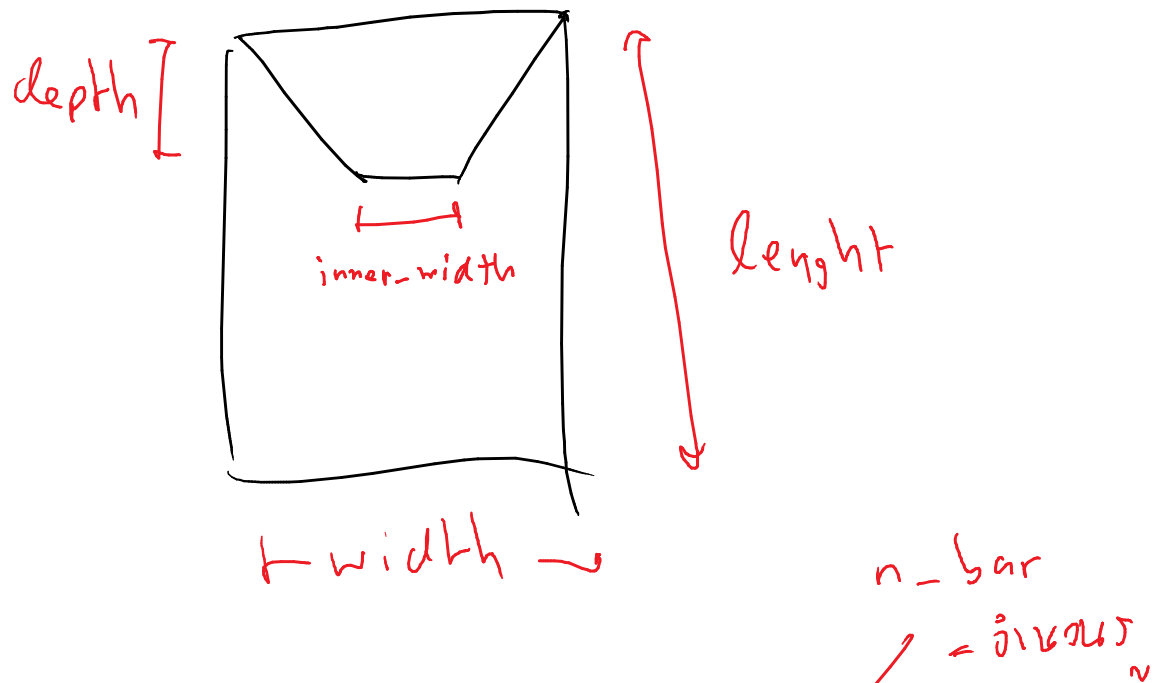


Model 2: lizard trap

Based on <https://www.youtube.com/watch?v=7JrPTmyVNko>

The only design change is from cylinder to rectangular shape.

```
trap(length, width, inner_width, depth, n_bar);
```



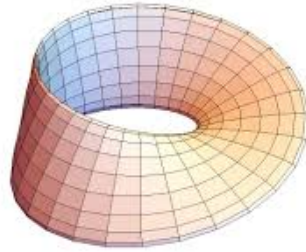
အသံပြန်ပေးရန် အသံပြန်ပေးရန်

Model 3: parametric equation in OPENSCAD

Mobius stair

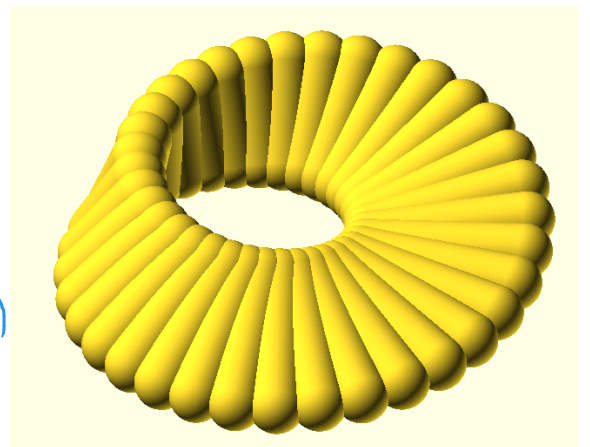
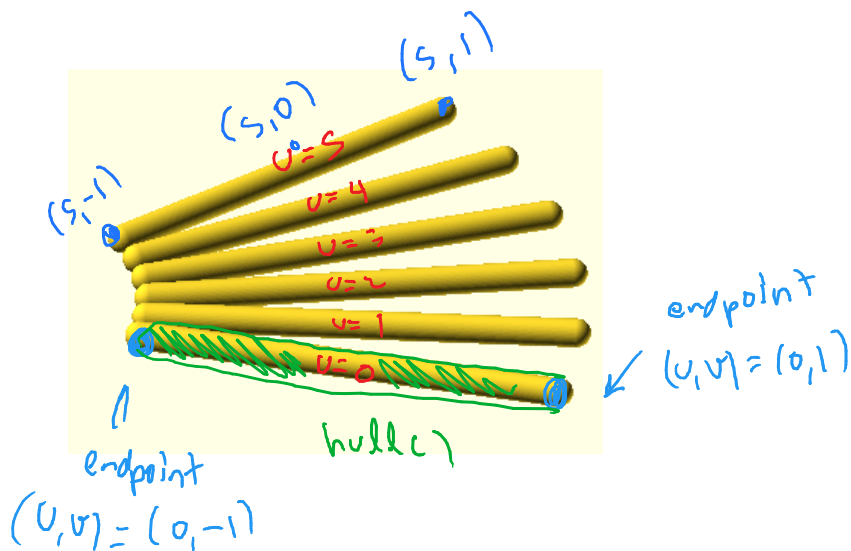
Mobius strip equation from wikipedia

$$\begin{aligned}x(u, v) &= \left(1 + \frac{v}{2} \cos \frac{u}{2}\right) \cos u \\y(u, v) &= \left(1 + \frac{v}{2} \cos \frac{u}{2}\right) \sin u \\z(u, v) &= \frac{v}{2} \sin \frac{u}{2} \\ \text{for } 0 \leq u < 2\pi \text{ and } -1 \leq v \leq 1.\end{aligned}$$

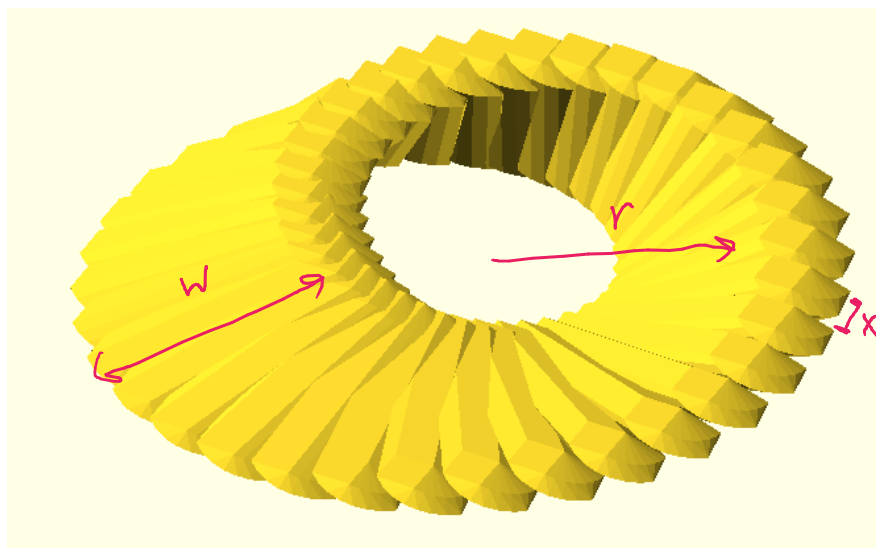


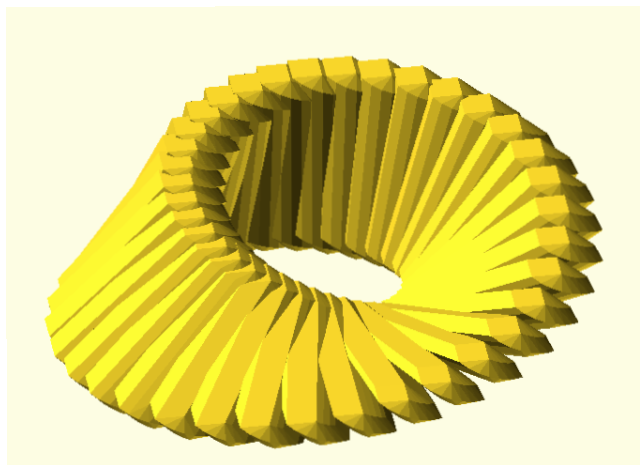
Got an idea from <https://github.com/oherrala/openscad-moebius/blob/master/moebius-strip.scad>

The code is clean and simple, however, I don't really understand the math behind it so I use a totally different approach. I divide the strip into parts from $[u]=0$ to $[u]=360$. Then for each $[u]$, calculate the 2 end point of that section, then create a shape by connecting these 2 ends point using `hull()`.

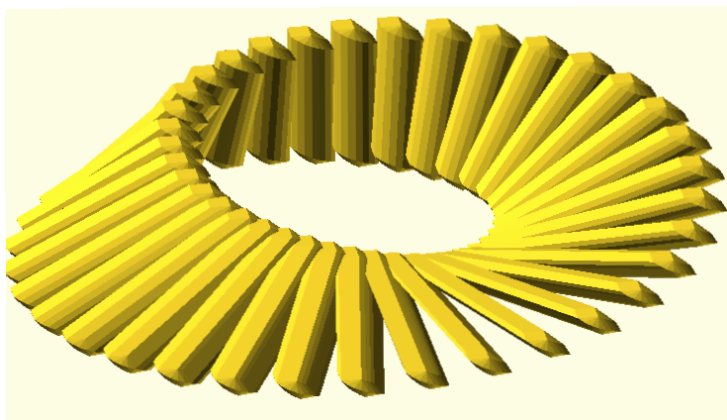


```
mobius(r=radius , w=width , t=thickness );
```

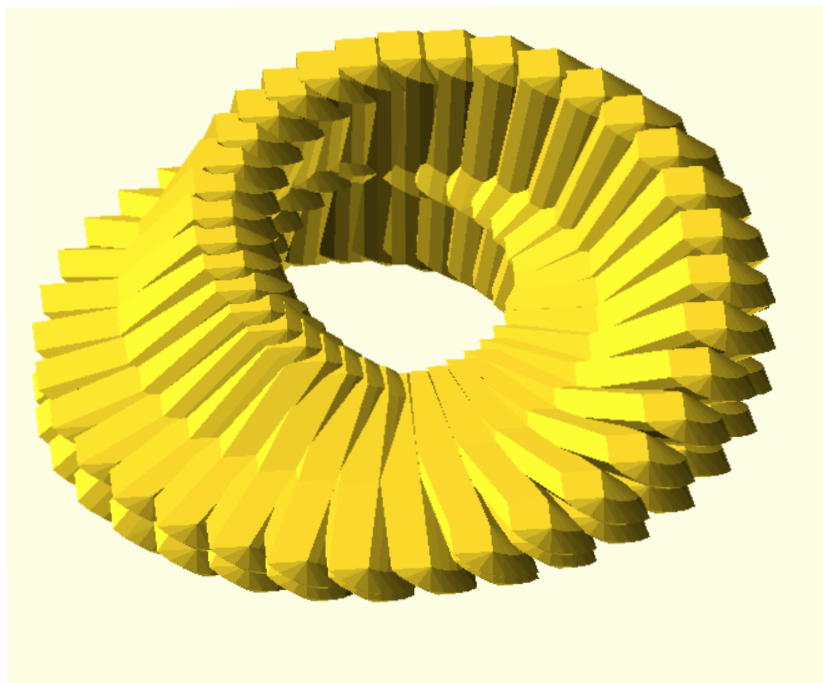




$(r=30, w=30, t=5)$



$(r=60, w=30, t=5)$



forgot to record

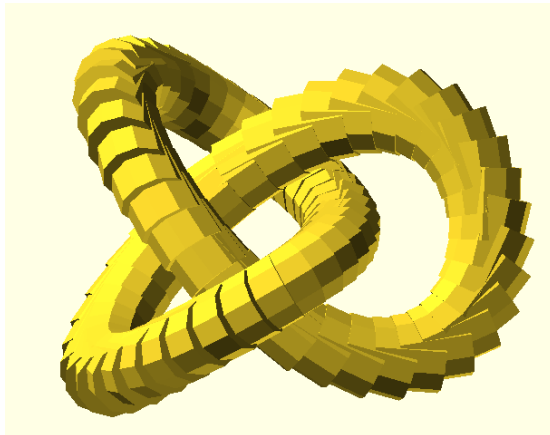
Trefoil dragon ring

Trefoil knot equation from wikipedia

$$\begin{aligned}x &= \sin t + 2 \sin 2t \\y &= \cos t - 2 \cos 2t \\z &= -\sin 3t\end{aligned}$$



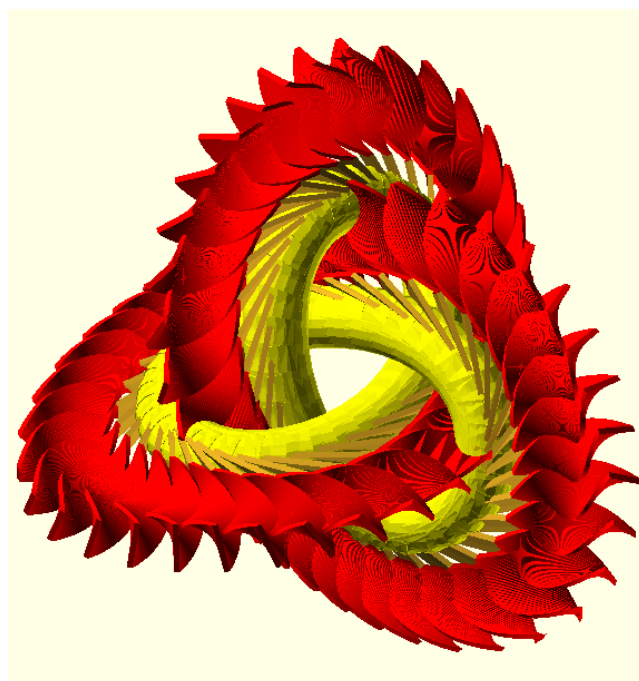
This one is more simple than mobius strip since there is only one parametric variable t . First, divided the trefoil knot into parts from $[t]=0$ to $[t]=360$, then for each part, create a dragon bodies and fur, we also have to rotate it so that it point correctly along the curves.



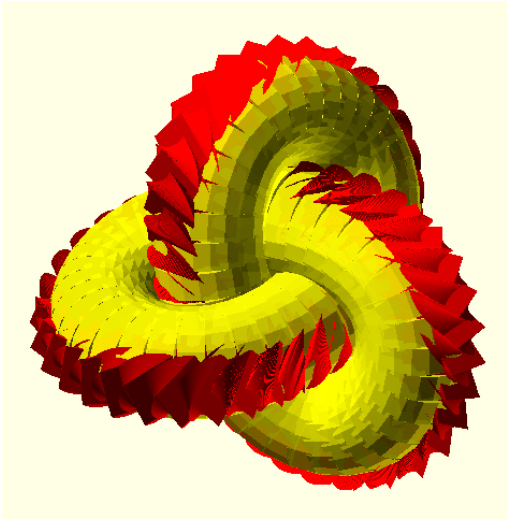
← base trefoil knot
with no modification

I didn't plan to make a dragon, but it look like dragon after playing around inserting random stuff into the based trefoil knot, so I don't really understand the actual meaning of a, b, c either. But the rule is that $a+b$ should be less than c . c determine fur's size. a and b determine the body size.

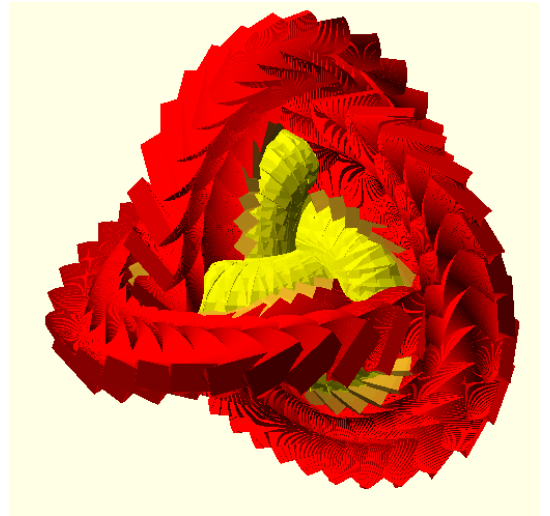
`dragon(a=?,b=?,c=?);`



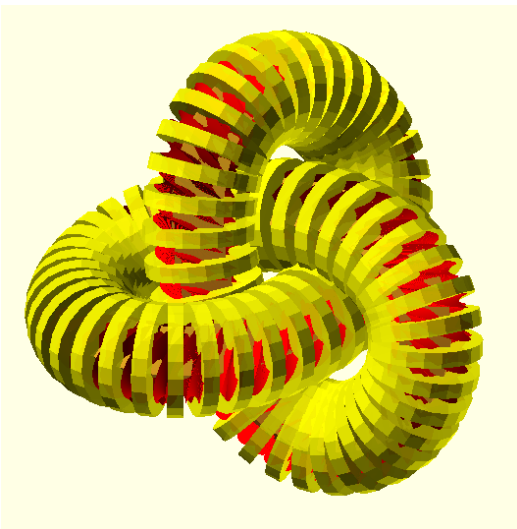
$(a=1, b=0.1, c=2)$



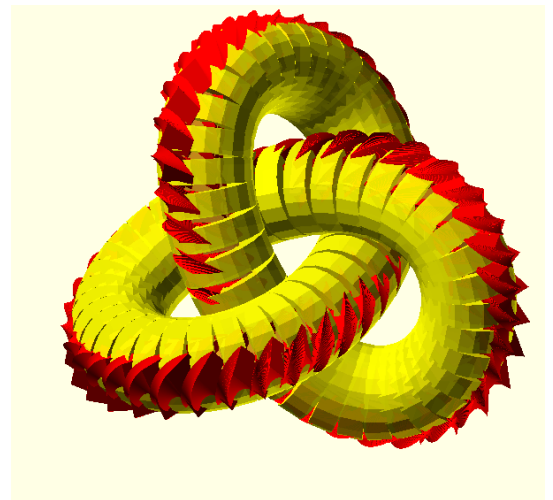
$$(a=1, b=1, c=1)$$



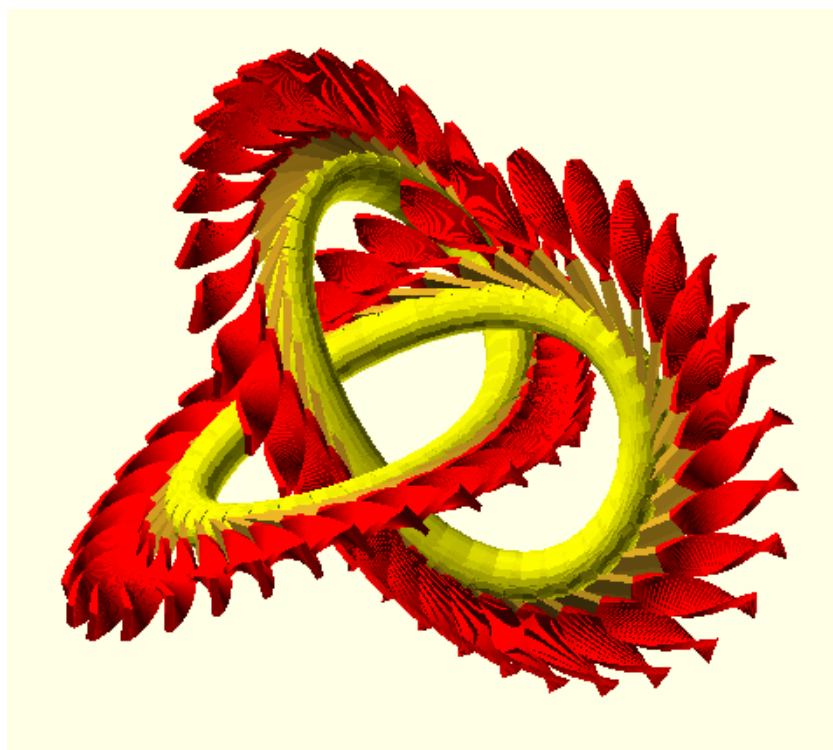
$$(a=1, b=2, c=3)$$



$$(a=1, b=0.8, c=0.5)$$



$$(a=1, b=0.5, c=0.8)$$



$$(a=0.5, b=0.1, c=1.5)$$