1 Equations

1.1 Super Formula

$$r(\varphi) = (|\frac{cos(\frac{m\varphi}{4})}{a}|^{n_2} + |\frac{sin(\frac{m\varphi}{4})}{b}|^{n_3})^{-\frac{1}{n_1}}$$

by choosing different values for the parameters a, b, m, n_1, n_2, n_3, different shapes can be generated.

It is possible to extend the formula to 3,4, n dimensions, by means of the spherical product of superformulas. The parametric equations are as follows:

$$x = r_1(\theta)cos\theta \cdot r_2(\phi)cos\phi \tag{1}$$
$$y = r_1(\theta)sin\theta \cdot r_2(\phi)cos\phi \tag{2}$$
$$z = r_2(\phi)sin\phi \tag{3}$$

where $-\frac{\pi}{2} > \phi > \frac{\pi}{2}$, and $\pi > \theta > \pi$

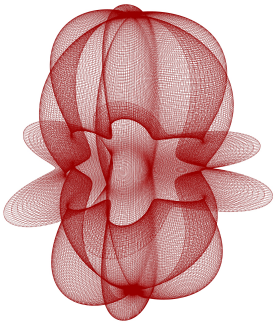

Figure 1: Wireframe.

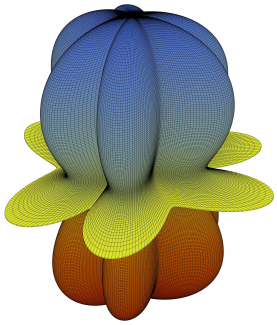

Figure 2: Rendered.