Mapping onto the horn torus

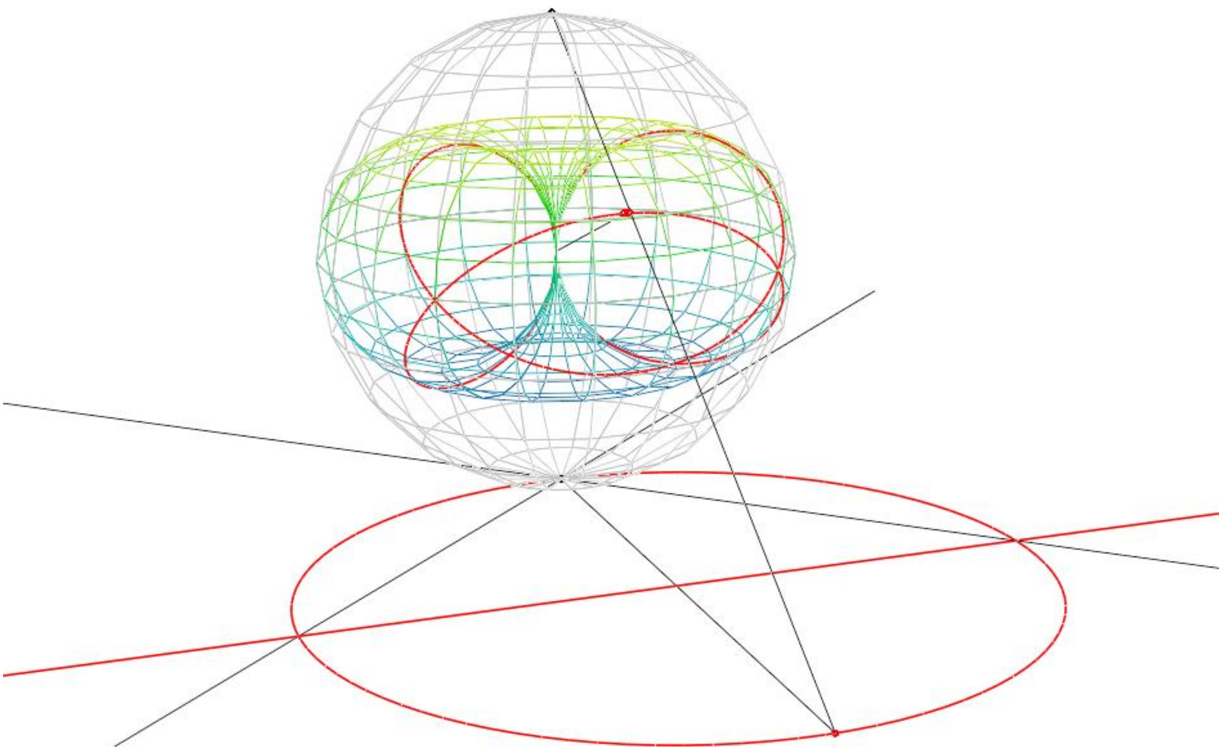
Formulas for mapping onto the horn torus:

$$\xi = \frac{2x\sqrt{x^2+y^2}}{(x^2+y^2+1)^2}$$

$$\eta = \frac{2y\sqrt{x^2+y^2}}{(x^2+y^2+1)^2}$$

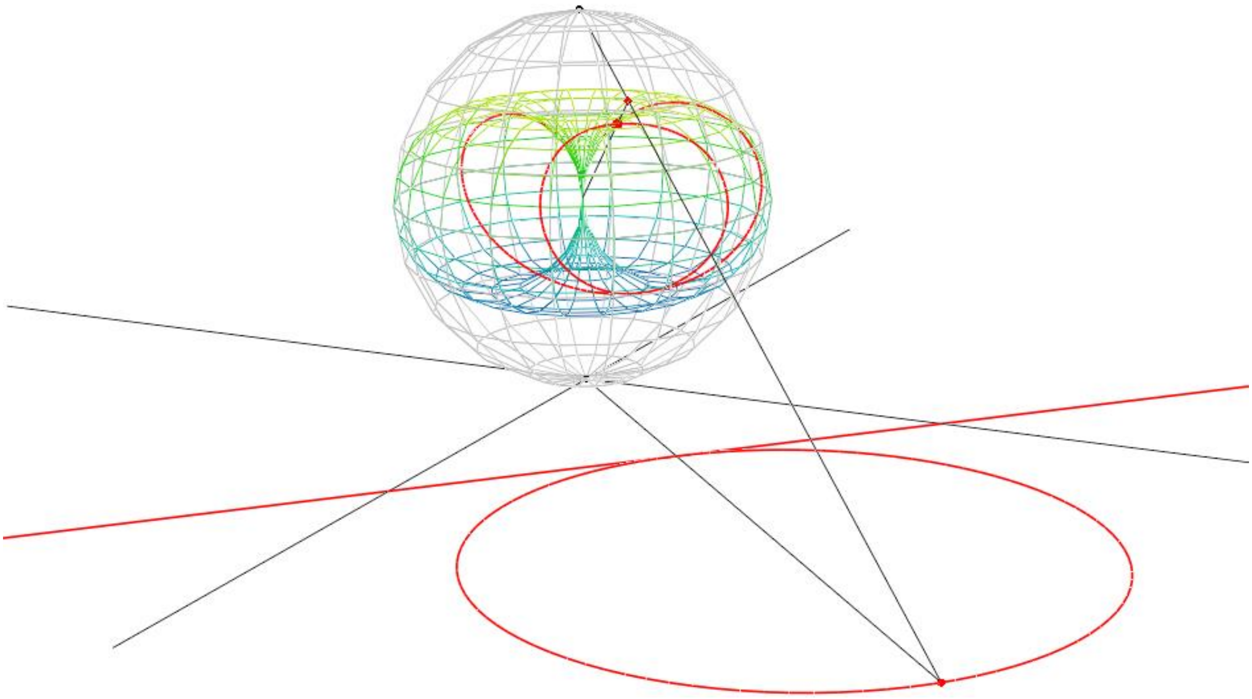
$$\zeta = \frac{(x^2+y^2-1)\sqrt{x^2+y^2}}{(x^2+y^2+1)^2} + \frac{1}{2}$$

The result of mapping of circles and lines onto the horn torus. Implemented with Mathcad software.



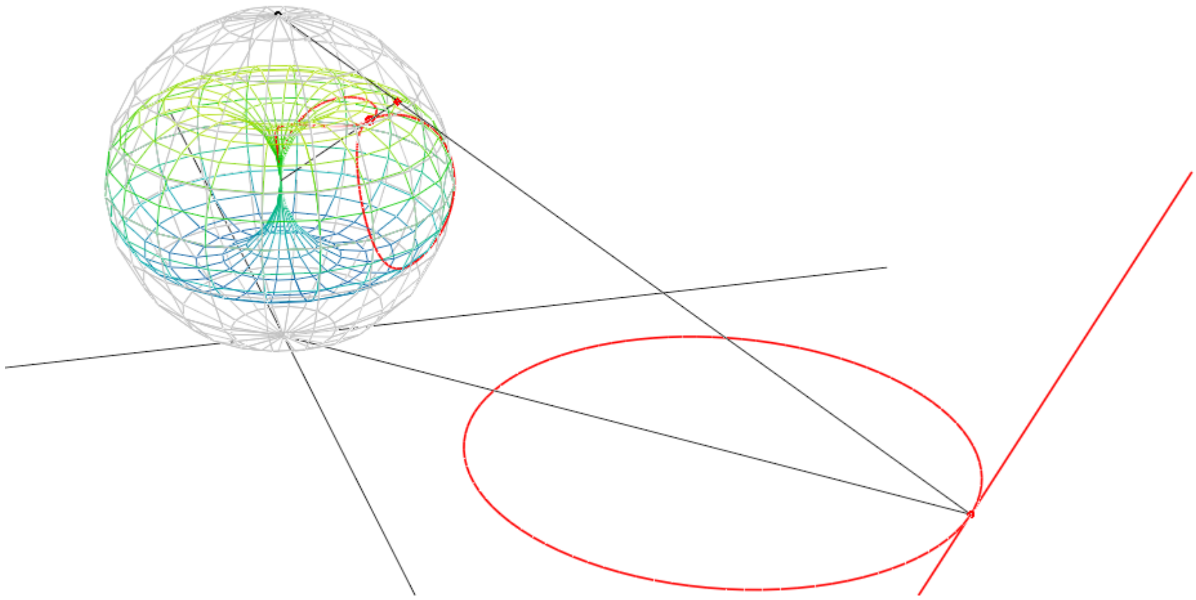
$T, S, O, O_p, Z, Z_t, Z, s_1, s_2, s_3, Ox, Oy, C_p, C_t, L_p, L_t$

A circle of radius $\frac{1}{\sqrt{2}}$ with center $(0.5, 0.5)$. And a line $y(x) = -x + 1$.



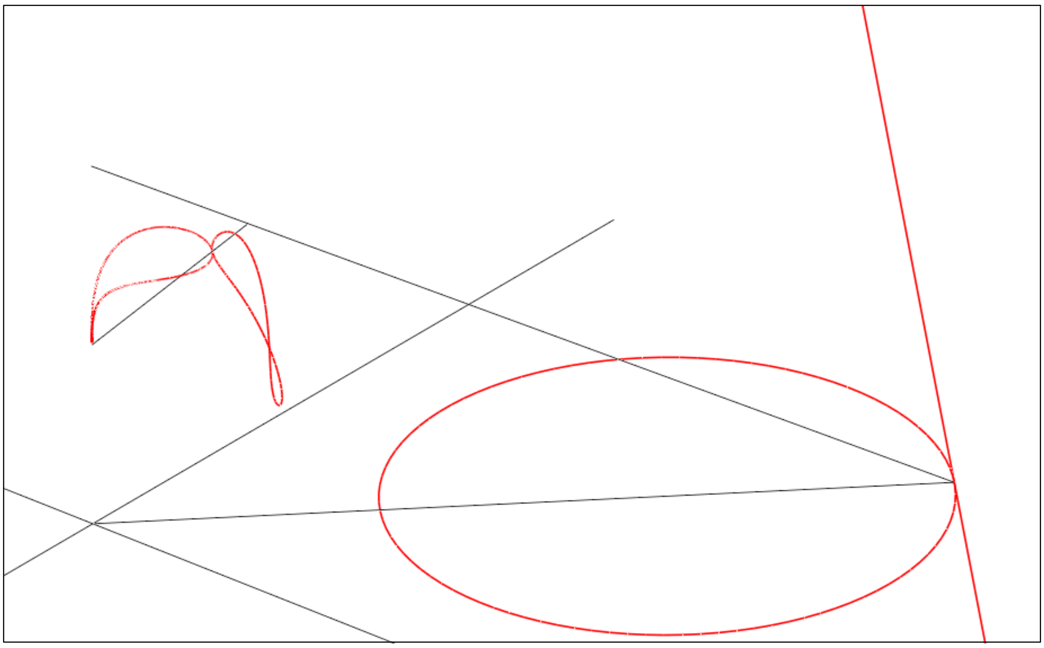
T, S, O, O_p, Z, Z_t, Z, s_1, s_2, s_3, Ox, Oy, C_p, C_t, L_p, L_t

A circle of radius $\frac{1}{\sqrt{2}}$ with center $(1, 1)$. And a line $y(x) = -x + 1$.



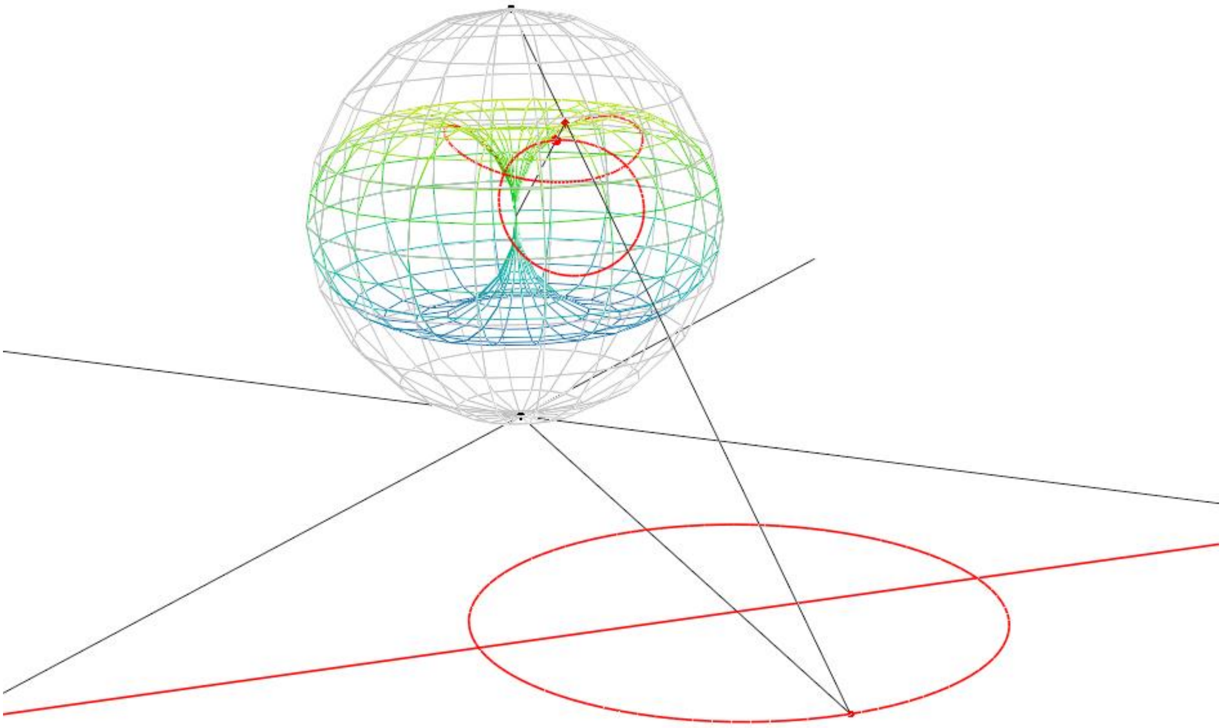
$T, S, O, O_p, Z, Z_t, Z, s_1, s_2, s_3, Ox, Oy, C_p, C_t, L_p, L_t$

A circle of radius $\frac{1}{\sqrt{2}}$ with center $(1, 1)$. And a line $y(x) = -x + 3$.



$Ox, Oy, s_1, s_2, s_3, C_p, C_t, L_p, L_t$

The same as in the previous figure, but having different angle and without contours of the torus and sphere. A circle of radius $\frac{1}{\sqrt{2}}$ with center $(1, 1)$. And a line $y(x) = -x + 3$.



T, S, O, O_p, Z, Z_t, Z, s_1, s_2, s_3, Ox, Oy, C_p, C_t, L_p, L_t

A circle of radius $\frac{1}{2}$ with center $(1, 1)$. And a line $y(x) = -x + 2$.

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