> **`restart:with(plots):`**

gencat.mws

The HELI-CATENOID as a parametric surface of intersecting twisted minimal surfaces. In the limits a=0 b=1 to a=1,b=0, the minimal surface changes from a helicoid to a catenoid of revolution.

with the details of the Repere Mobile.

First, a picture:

> **`R:=[a*sinh(v)*cos(u)-b*cosh(v)*sin(u),a*sinh(v)*sin(u)+b*cosh(v)*cos(u),a*u+b*v];`**

>

$$R := [\, a \sinh(v) \cos(u) - b \cosh(v) \sin(u),\ a \sinh(v) \sin(u) + b \cosh(v) \cos(u),\ a\,u + b\,v \,]$$

> **`a:=0.5:b:=.5:`**

> **`plot3d(R(u,v),u=-2*Pi..2*Pi,v=-Pi..Pi,shading=zgreyscale,lightmodel=light4,axes=framed,style=PATCHNOGRID,numpoints=5000,orientation=[34,60]);`**