

The sphere

The equation of the circle only contains the variables x and y . We are still in the two-dimensional space. The equation of the circle is:

$$x^2 + y^2 = r^2.$$

If you turn the surface, you can see a tube. This is because there is no restriction along the z axis. If you replace the variable x with z , you still get a tube.

Now add the missing term as a square (for example z^2 to the circle equation). This leads to a sphere:

$$x^2 + y^2 + z^2 = r^2,$$

in SURFER-format

$$0 = x^2 + y^2 + z^2 - a^2.$$

What happens, if you turn the sphere?