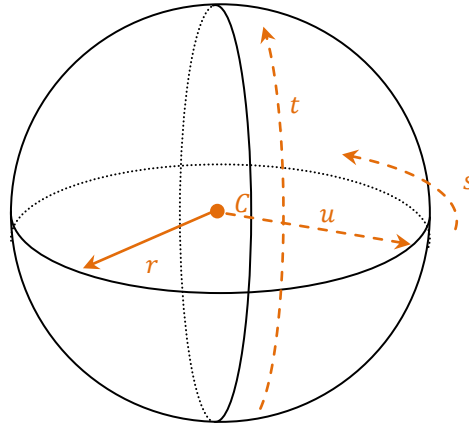


Parametric Sphere (Volume)

A parametric sphere volume can be defined by a center point C , a radius r , and three parameters s , t , and u .



$$\begin{aligned}x &= x_c + u \cdot r \cdot \cos(2\pi \cdot s) \cdot \sin\left(\pi \cdot t - \frac{\pi}{2}\right) \\y &= y_c + u \cdot r \cdot \sin(2\pi \cdot s) \cdot \sin\left(\pi \cdot t - \frac{\pi}{2}\right) \\z &= z_c + u \cdot r \cdot \cos\left(\pi \cdot t - \frac{\pi}{2}\right)\end{aligned}$$

This set of parametric equations is essentially a parameterized version of the spherical to Cartesian coordinate transform with a variable radius, parameter u . An example sphere volume is shown drawn below. The volume is sampled evenly in s , t , and u .

