

Nanyang Technological University

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CZ 2003 - Lab 4: Implicit Solids

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FShape

The FShape is made up of the following shapes:

1. Cylinder (which is further made up of:)
 - 1.1 **Infinite cylinder** centered at (0,0,0) with radius 0.7: $0.7^2 - x^2 - y^2 \geq 0$
 - 1.2 **Half plane** defined by $1 - z \geq 0$
 - 1.3 Another **half plane** defined by $z + 1 \geq 0$
2. Cone (which is further made up of:)
 - 2.1 **Infinite cone** with circular base centered at (0,0,1) with radius 0.7, and height 1:
$$\frac{x^2 + y^2}{0.7^2} - (z - 2)^2 \geq 0$$
 - 2.2 **Half plane** defined by $z - 2 \geq 0$
 - 2.3 Another **half plane** defined by $3 - z \geq 0$
3. **Ellipsoidal hole**: $1 - \left(\frac{x}{1}\right)^2 - \left(\frac{y}{0.4}\right)^2 - \left(\frac{z}{0.4}\right)^2 \geq 0$

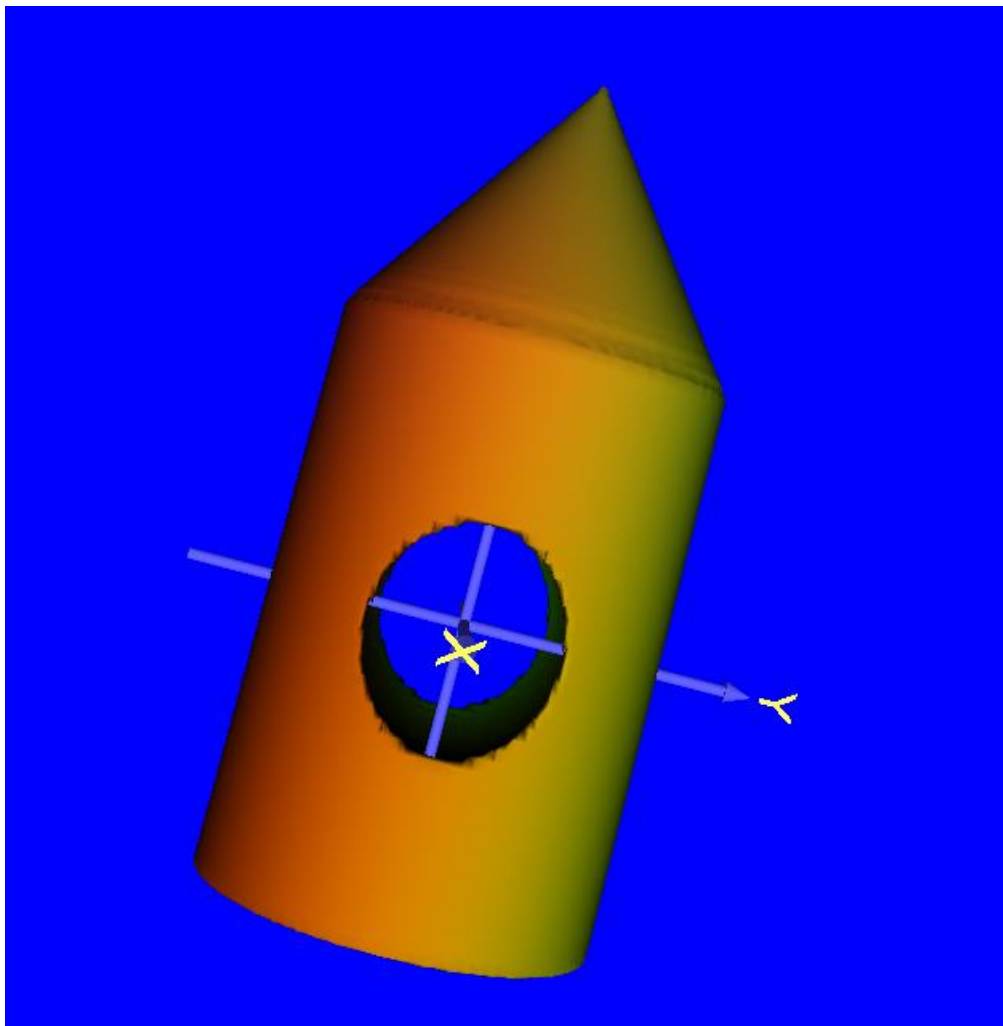


Figure 1: The final compound solid, made from a finite cylinder with an ellipsoid hole, and a finite cone on top of it. One can imagine it as a rocket, with the ellipsoid hole being where the astronauts will be :). Source code: FShape.wrl