

Render X Lantern

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Sketch

Model

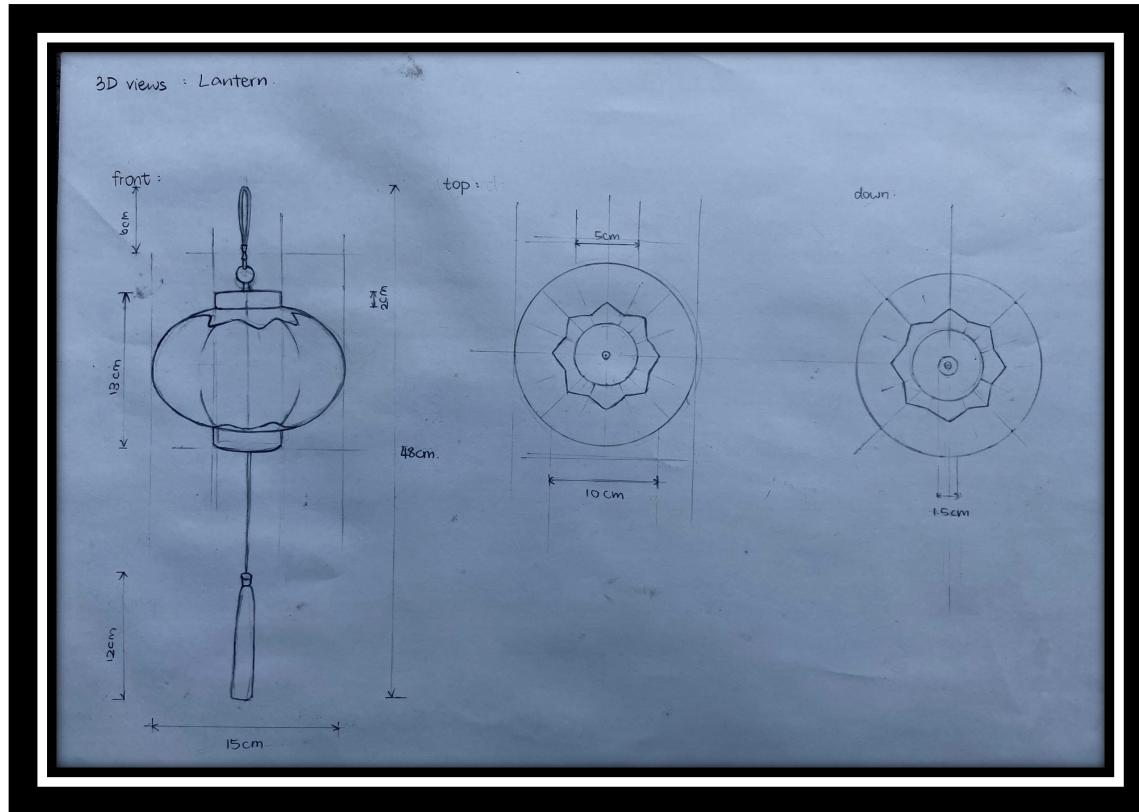
Render

Animation

CONTENT



Sketch



◆ Inspiration





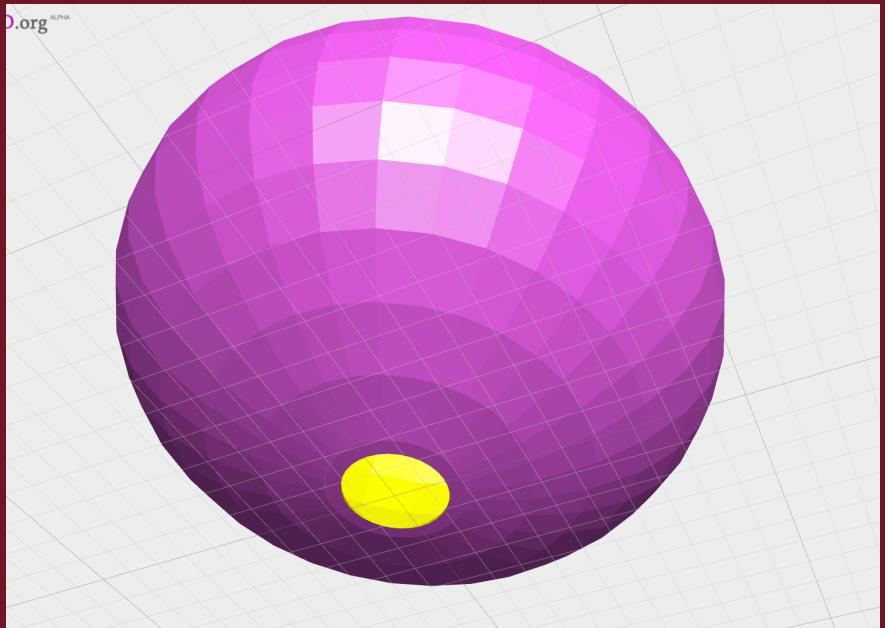
Model*Sprite I

In order to make the scene of the lantern more reasonable and more realistic, we added sprite models to the scene to make the sky full of stars

Model*Sprite II

The for loop is used to generate a corresponding number of sprite models, and also generate random numbers to make stars appear randomly in the scene

```
for (let i = 0; i < 200; i++) {var spriteMaterial  
=newTHREE.SpriteMaterial({  
color: 0xffffffff  });  
var sprite = newTHREE.Sprite(spriteMaterial);  
scene.add(sprite);  
sprite.scale.set(1, 1, 1);  
var k1 = Math.random() - 0.5;  
var k2 = Math.random() - 0.5;  
var k3 = Math.random() - 0.5;  
sprite.position.set(300* k1, 50+100*k3, 300 * k2)}
```



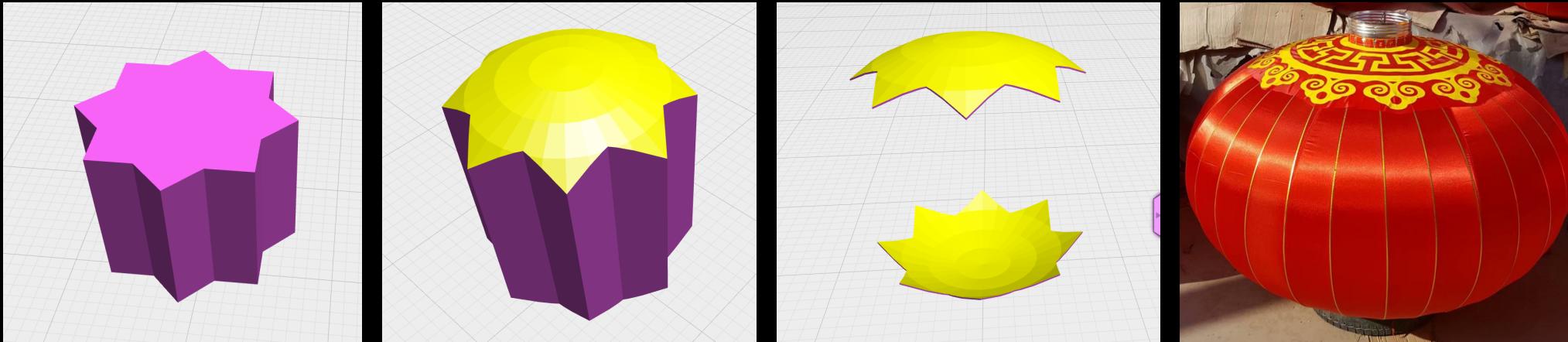
Lantern Modeling

First of all, the modeling of the lantern was carried out. I used two spheres for '*Difference*' operation.
[make the outer shell of the lantern]

Then poke a hole in the bottom as a place to put the light source.

```
difference(  
    difference(  
        sphere({r:10}).translate([0,0,10]).scale([1,1,0.80]),  
        sphere({r:9.9}).translate([0,0,10]).scale([1,1,0.80])  
    ),cylinder({r:1.5,h:3}).translate([0,0,-1])  
,
```

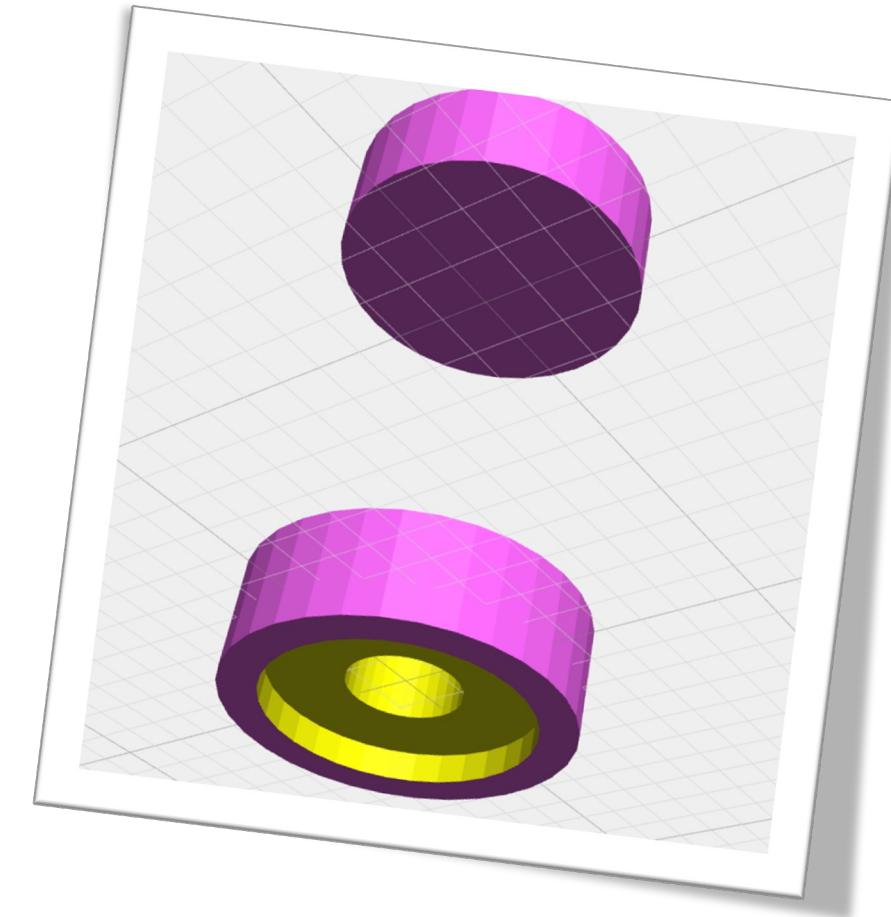
Modeling



The second is a layer of decoration outside the lantern, referring to the design of lanterns in our daily life

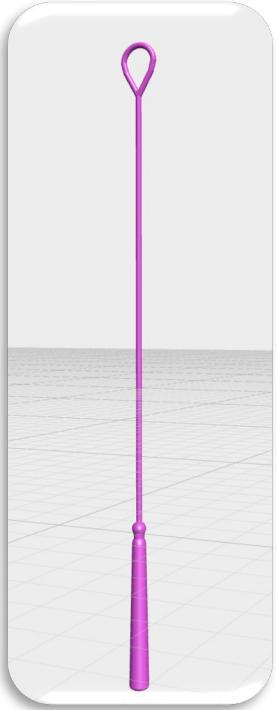
```
difference(  
    intersection(  
        union(  
            cube({size:10,center:true}),  
            cube({size:10,center:true}).rotateZ(45)  
                .scale([1,1,10]).translate([0,0,10]),  
            sphere({r:10.1}).translate([0,0,10]).scale([1,1,0.8])  
        ),  
        sphere({r:10}).translate([0,0,10]).scale([1,1,0.8])  
    )
```

```
cylinder({r:4.5,h:3}).translate([0,0,14]),  
difference(  
    difference(  
        cylinder({r:4.5,h:3}).translate([0,0,-1]),  
        cylinder({r:3.5,h:0.8}).translate([0,0,-1])  
    ),  
    cylinder({r:1.5,h:3}).translate([0,0,-1])  
)
```



Metal Ring

Modeling

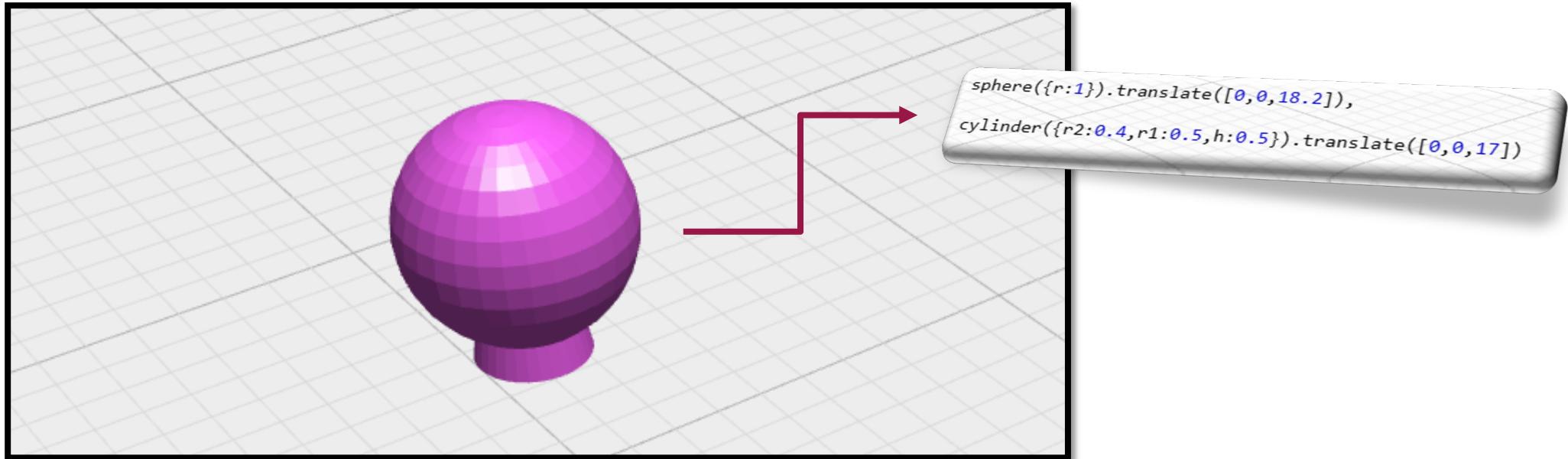


A thread running through the lantern

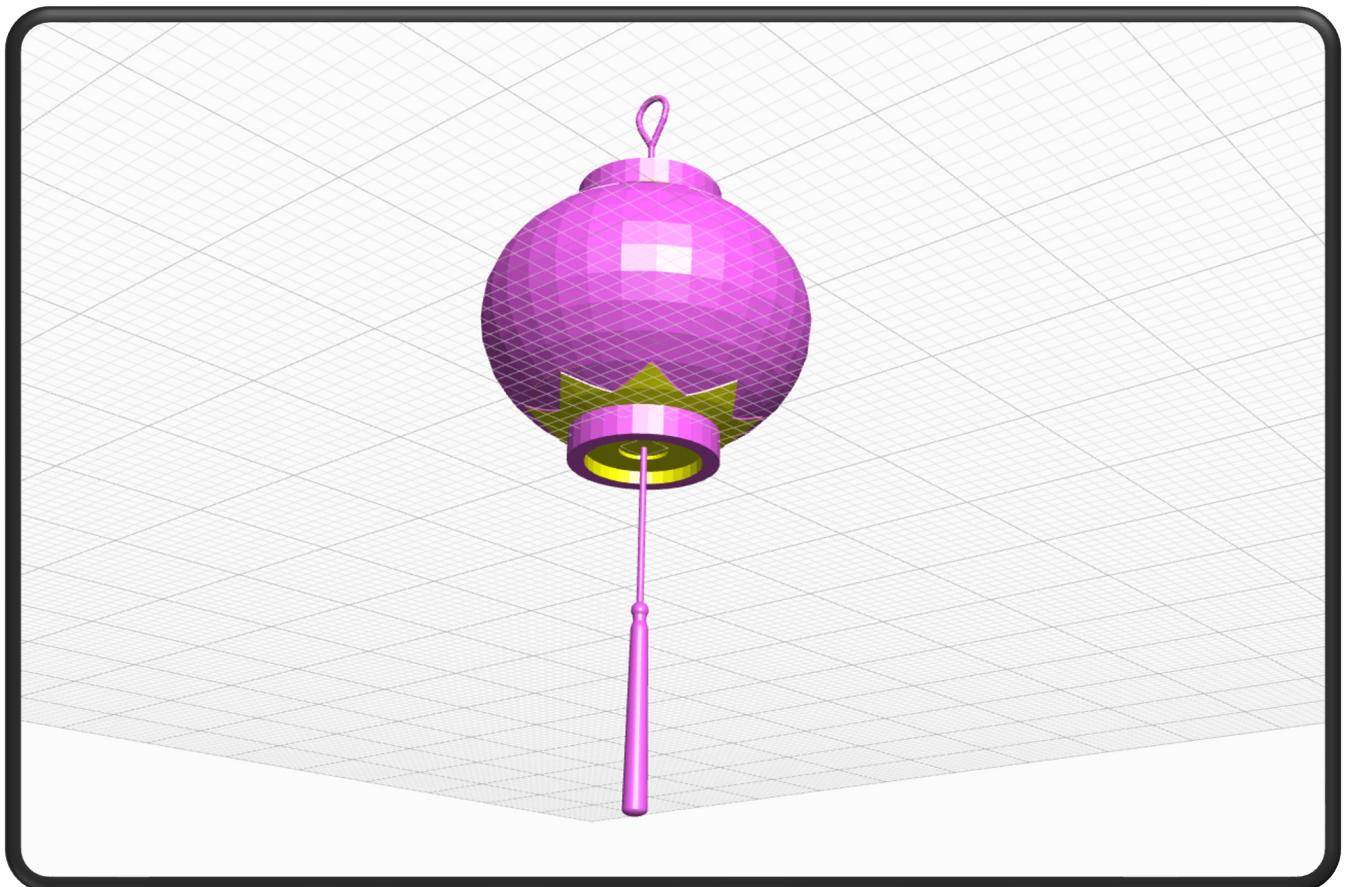
```
union(  
difference(  
    rotate_extrude(translate([1.175, 0, 0], circle({r: 0.2, fn: 30, center: true}))),  
    cube({size:10}).translate([-5,0,-5])  
).rotateX(-90).translate([0,0,23.04]),  
  
cylinder({r:0.2,h:2,center:true}).rotateY(-30).translate([-0.5,0,21.5]),  
cylinder({r:0.2,h:2,center:true}).rotateY(30).translate([0.5,0,21.5]),  
  
cylinder({r:0.2,h:0.8,center:true}).rotateY(-15).translate([-1.08,0,22.7]),  
cylinder({r:0.2,h:0.8,center:true}).rotateY(15).translate([1.08,0,22.7]),  
  
cylinder({r:0.2,h:2}).translate([0,0,19])  
,  
  
cylinder({r:0.2,h:30}).translate([0,0,-10]),  
sphere({r:0.5}).translate([0,0,-10]),  
cylinder({r2:0.4,r1:0.35,h:0.5}).translate([0,0,-10.8]),  
  
sphere({r:0.5}).scale([1,1,1.5]).translate([0,0,-11.2]),  
cylinder({r2:0.5,r1:0.7,h:10}).translate([0,0,-21.2]),  
sphere({r:0.7}).scale([1,1,0.5]).translate([0,0,-21.2])  
)
```

I used `rotate_extrude` to make the half-coil effect. and then used four cylinders for the transition connection

Decorations



Final result



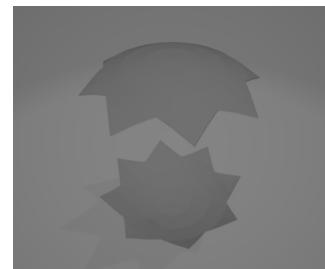
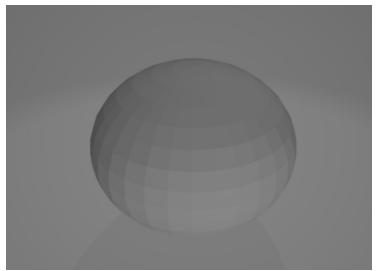
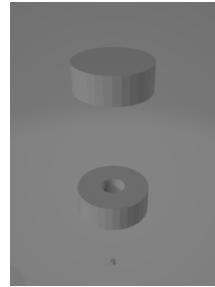
Render

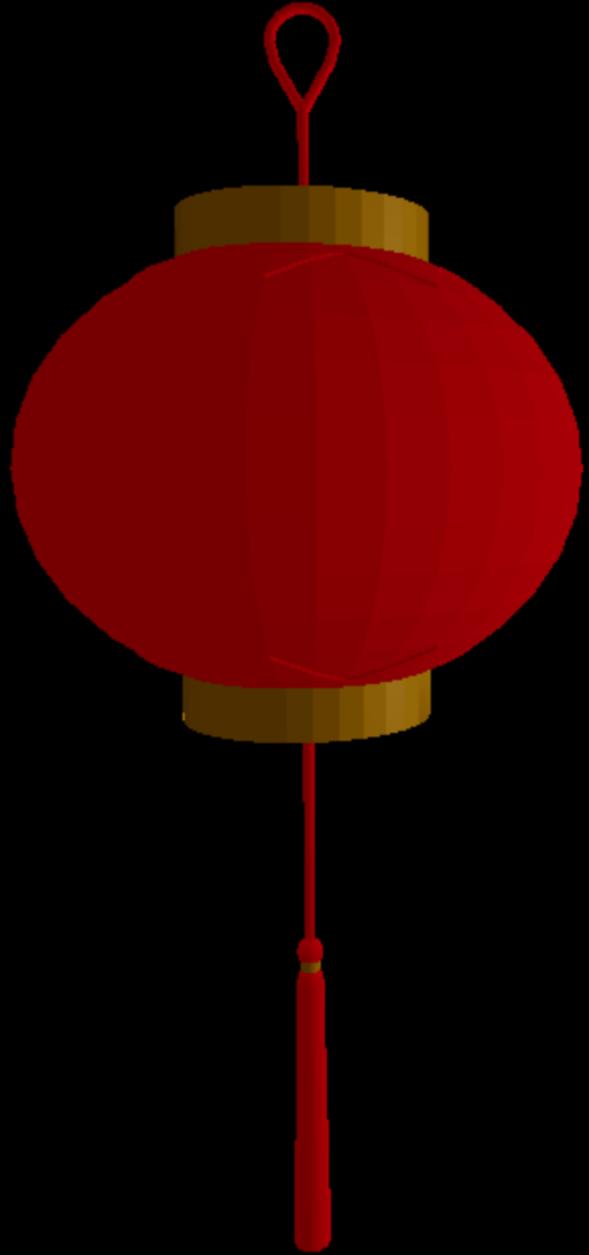


- First, I exported the model built in **OpenJscad**, but when using **threejs**, I found that the **stl** file exported from OpenJscad only contained vertices and surfaces.

Texture:

- Surface
- Cloth
- Metal
- Line





In order to keep the unity of
the whole rendering style, the
material of each part we
choose to use
'THREE MeshPhysicalMaterial'

Surface display



Fig 1

- We used **SphereGeometry** in threejs
- we also selected **MeshPhysicalMaterial** to test displacementMap, roughnessMap, metalnessMap, and normalMap, and got the results shown above.

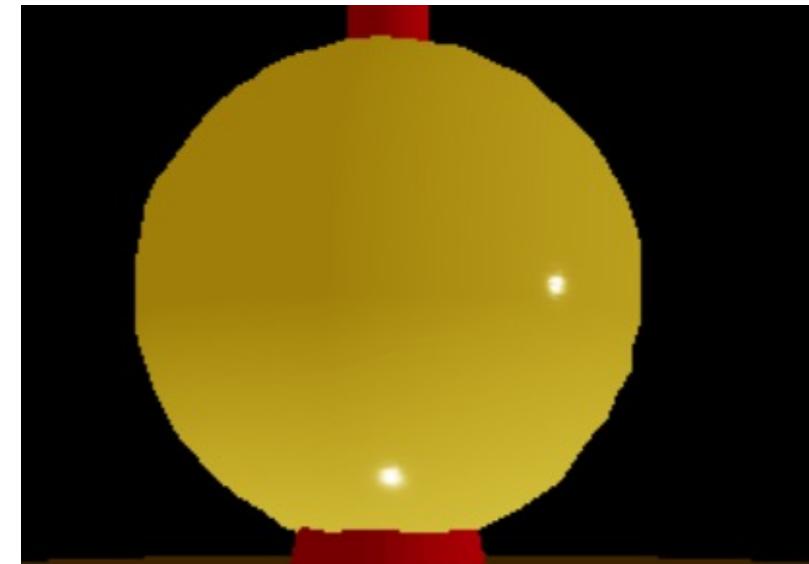
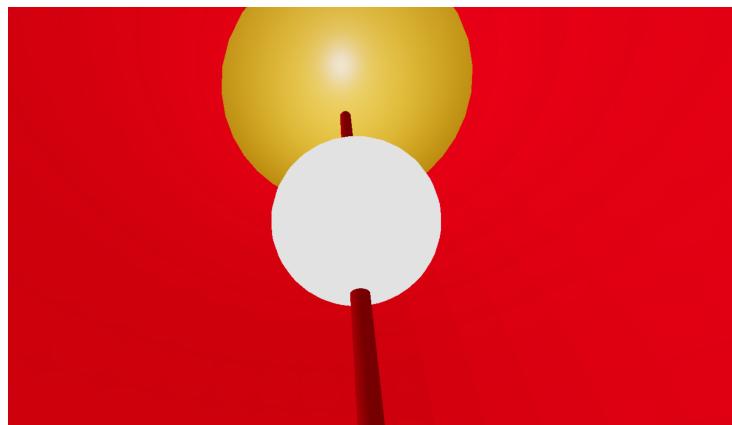
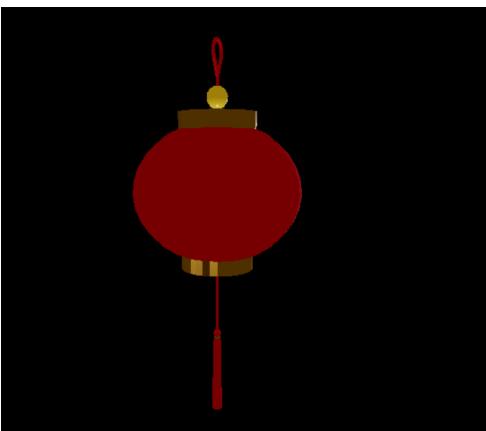


Fig 2

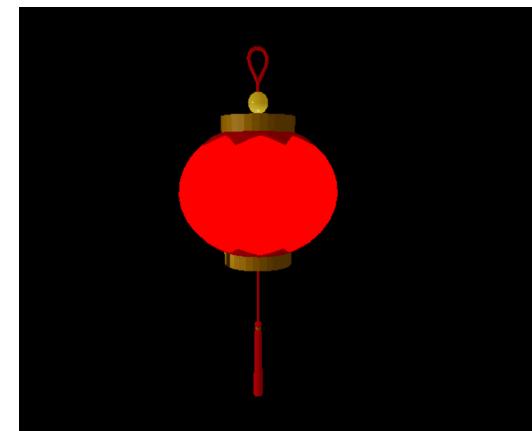
illumination



- Interior

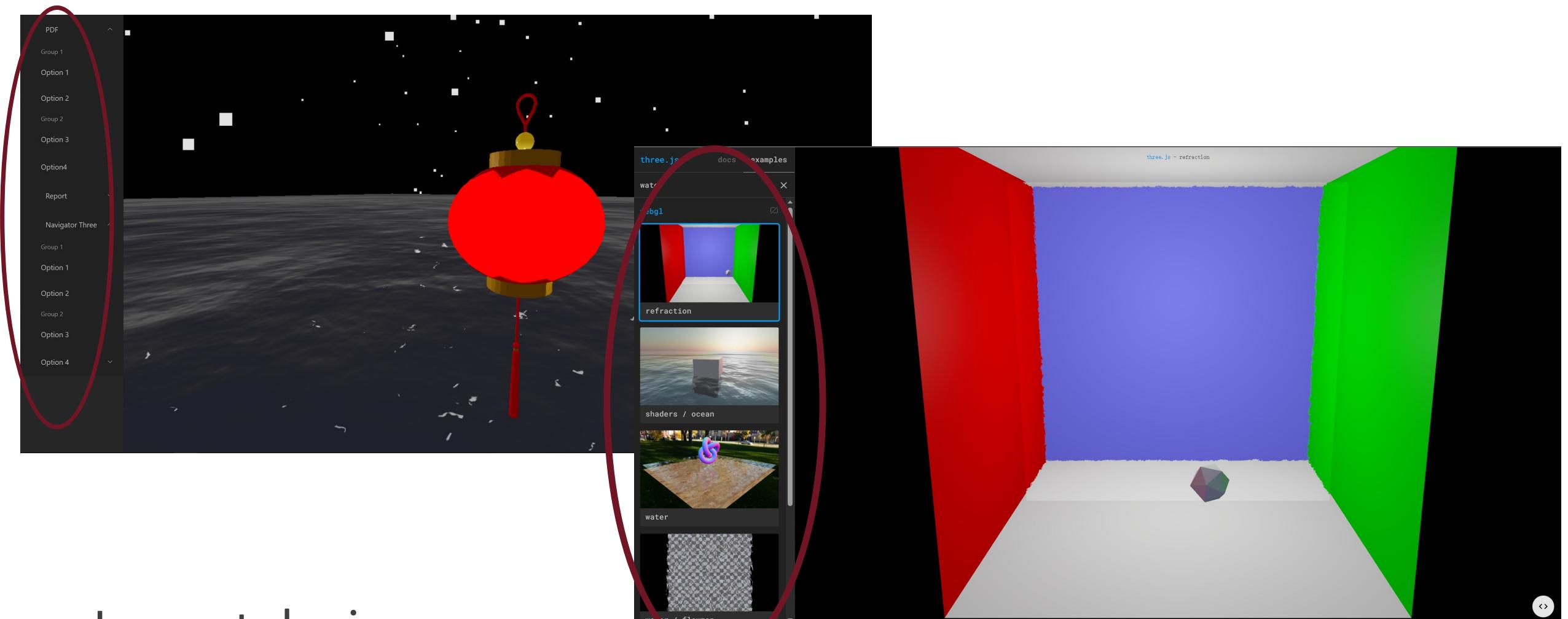


- Before



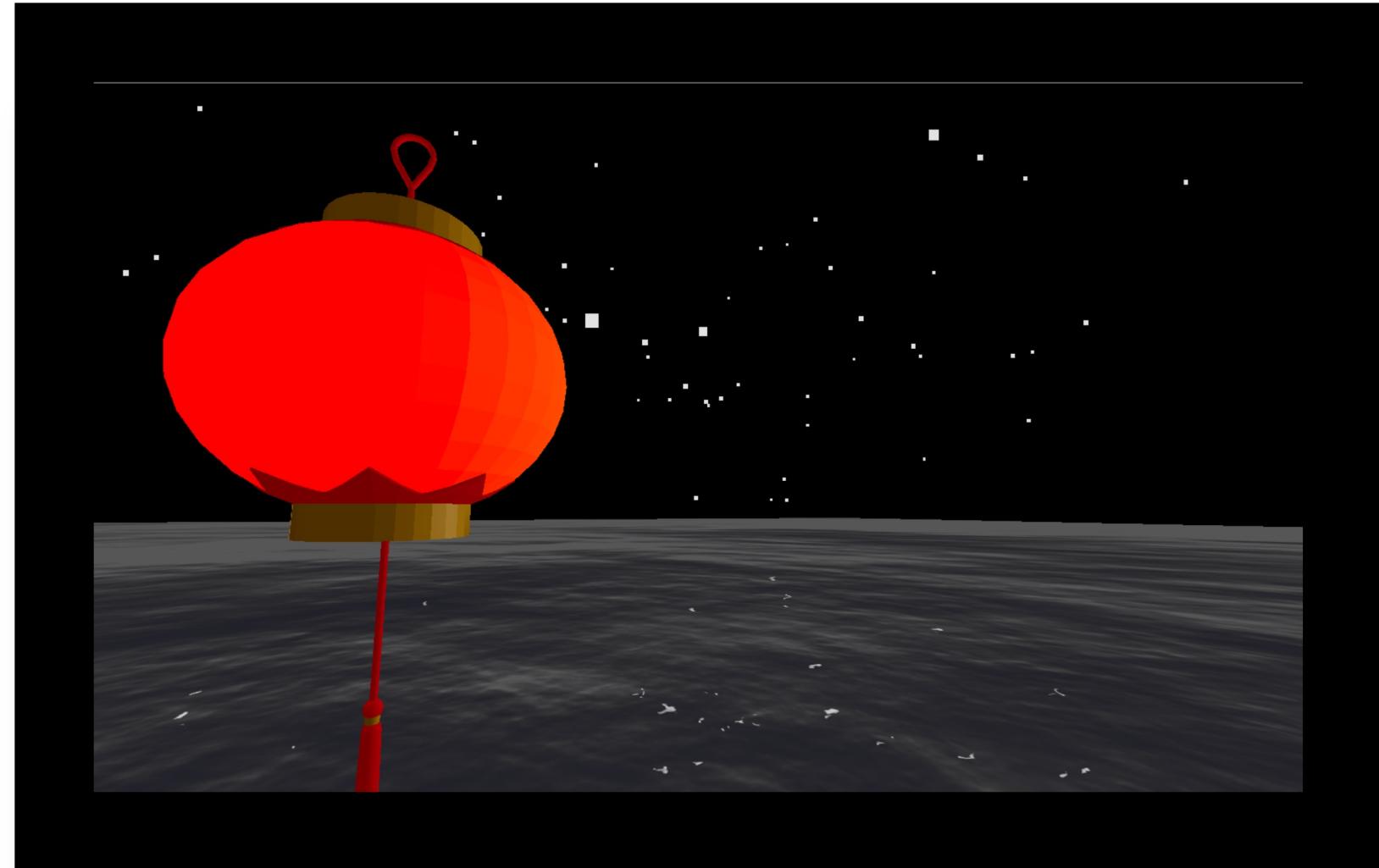
- After

BACKGROUND



Layout design
Vue3+Vite+ElementPlus+Threejs

Final effect of Rendering



THANK YOU FOR WATCHING