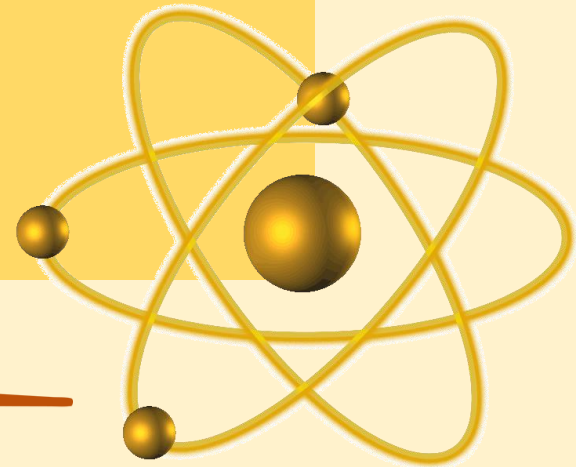


Animating

AEGIS



Olivia Adams

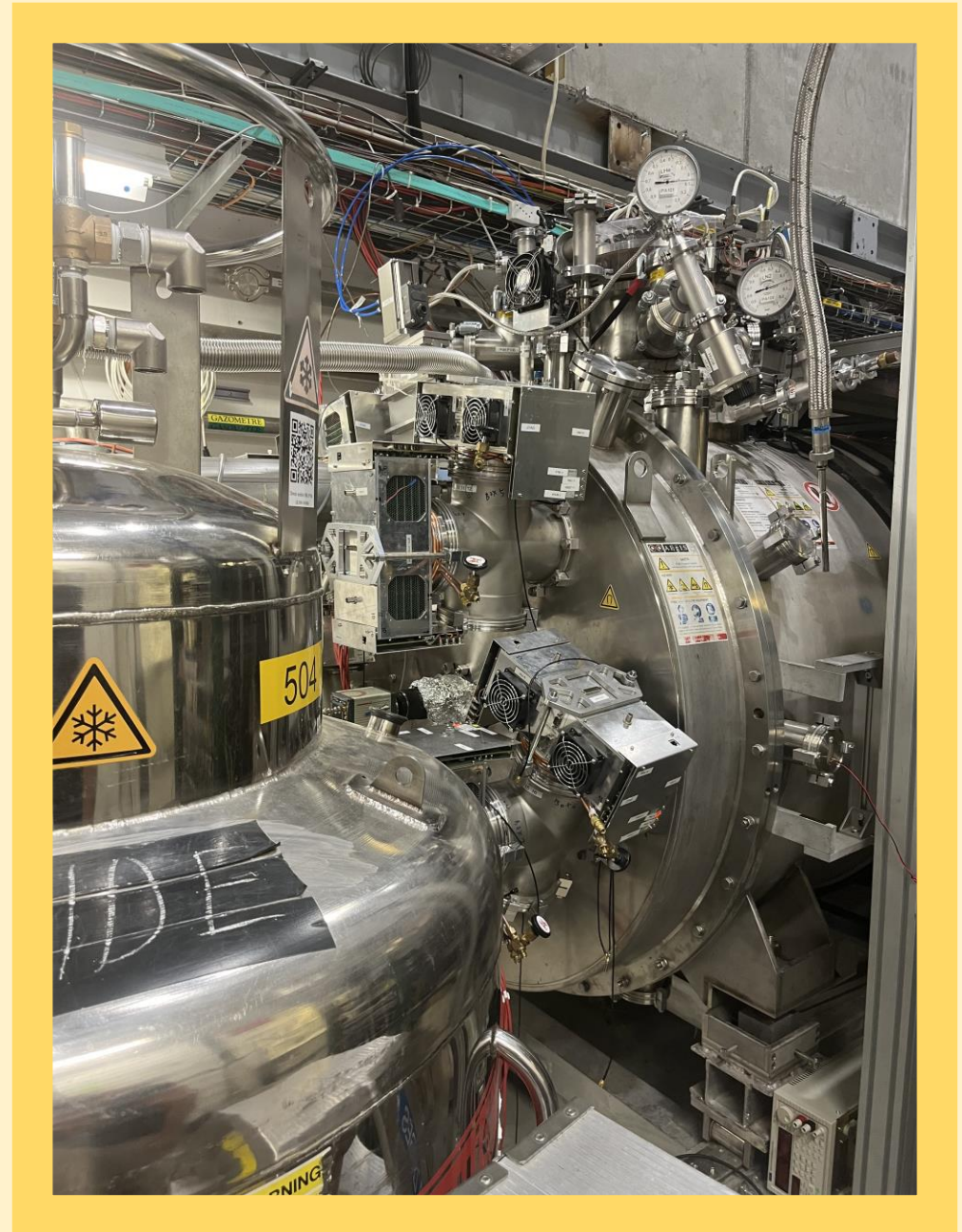
Stefan Haider and Benjamin Rienacker

August 10th 2023



What is AEGIS?

- Attached to CERN's Antiproton Decelerator (AD)
- Looking for gravity's effect on antimatter
- Baryon asymmetry
- Currently concerned with antimatter creation



My Project

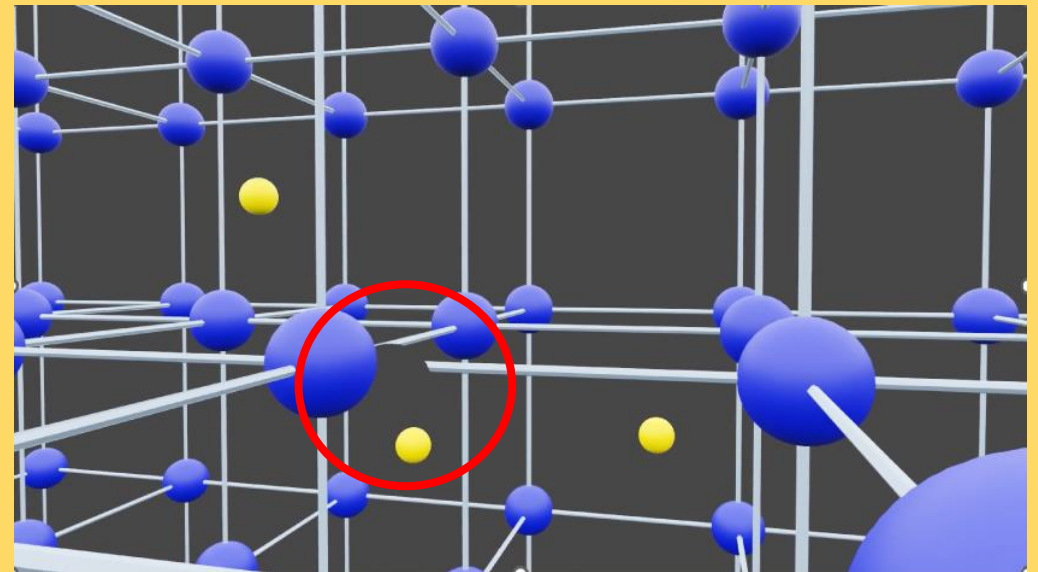
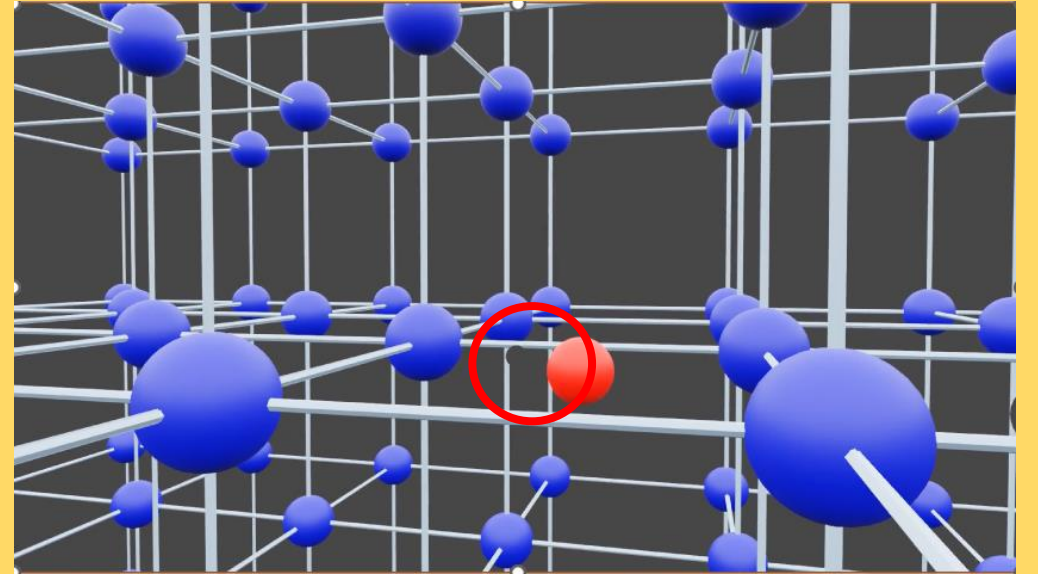
```
def shimmy(group, startframe, endframe, amount, speed):
    for i in ensureorder(group):
        offset = random.randint(1, 5)
        ox, oy, oz = bpy.data.objects[i].location
        currentframe = (startframe + offset)
        bpy.ops.object.select_all(action='DESELECT')
        bpy.data.objects[i].select_set(True)
        while currentframe <= endframe :
            bpy.data.objects[i].location = (ox, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type="Location")
            bpy.context.scene.frame_set(currentframe + speed)
            bpy.data.objects[i].location = (ox - amount, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type="Location")
            bpy.context.scene.frame_set(currentframe + 2*speed)
            bpy.data.objects[i].location = (ox, oy, oz)
            bpy.context.scene.frame_set(currentframe + 3*speed)
            bpy.data.objects[i].location = (ox + amount, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type="Location")
            currentframe = currentframe + 4*speed
```

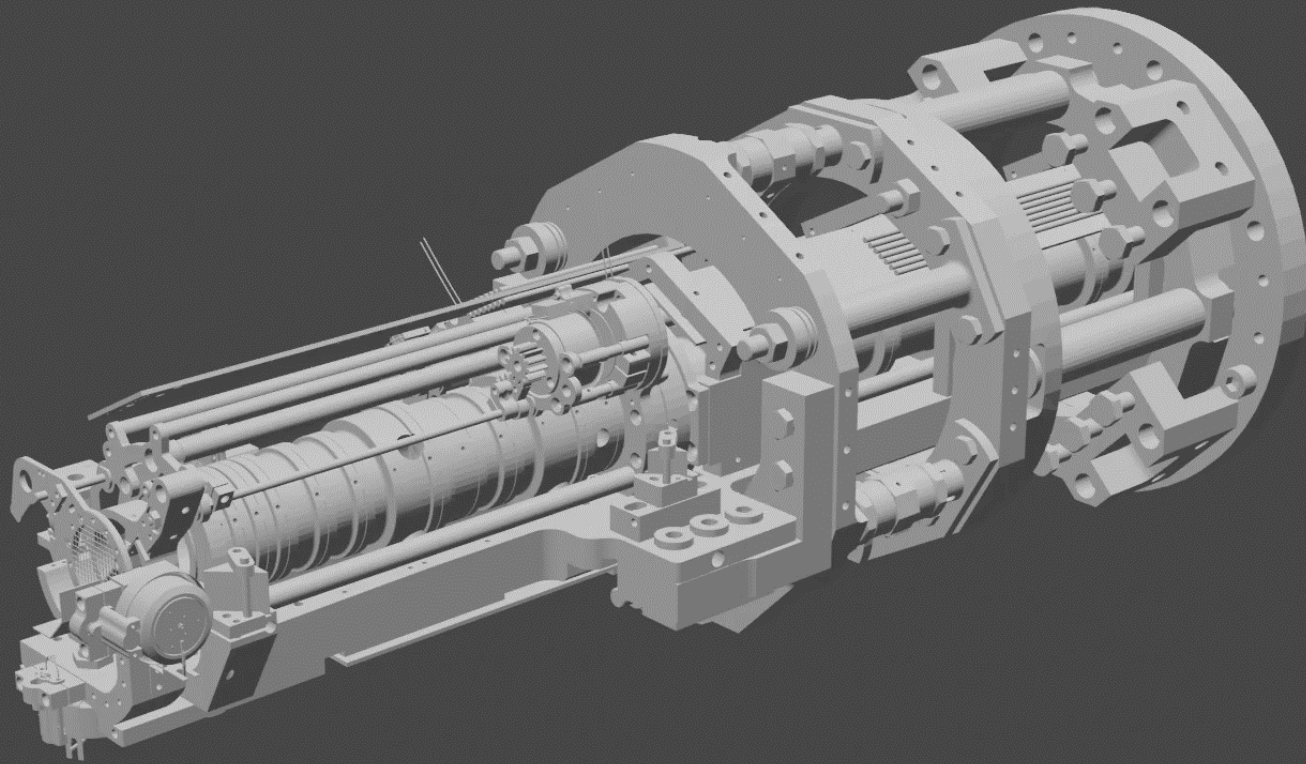
- Create videos to explain AEGIS
- Will be displayed in the AD for visitors
- Join physics and mechanics
- Focusing on antimatter creation
- Used Blender, mostly code
- Twelve videos

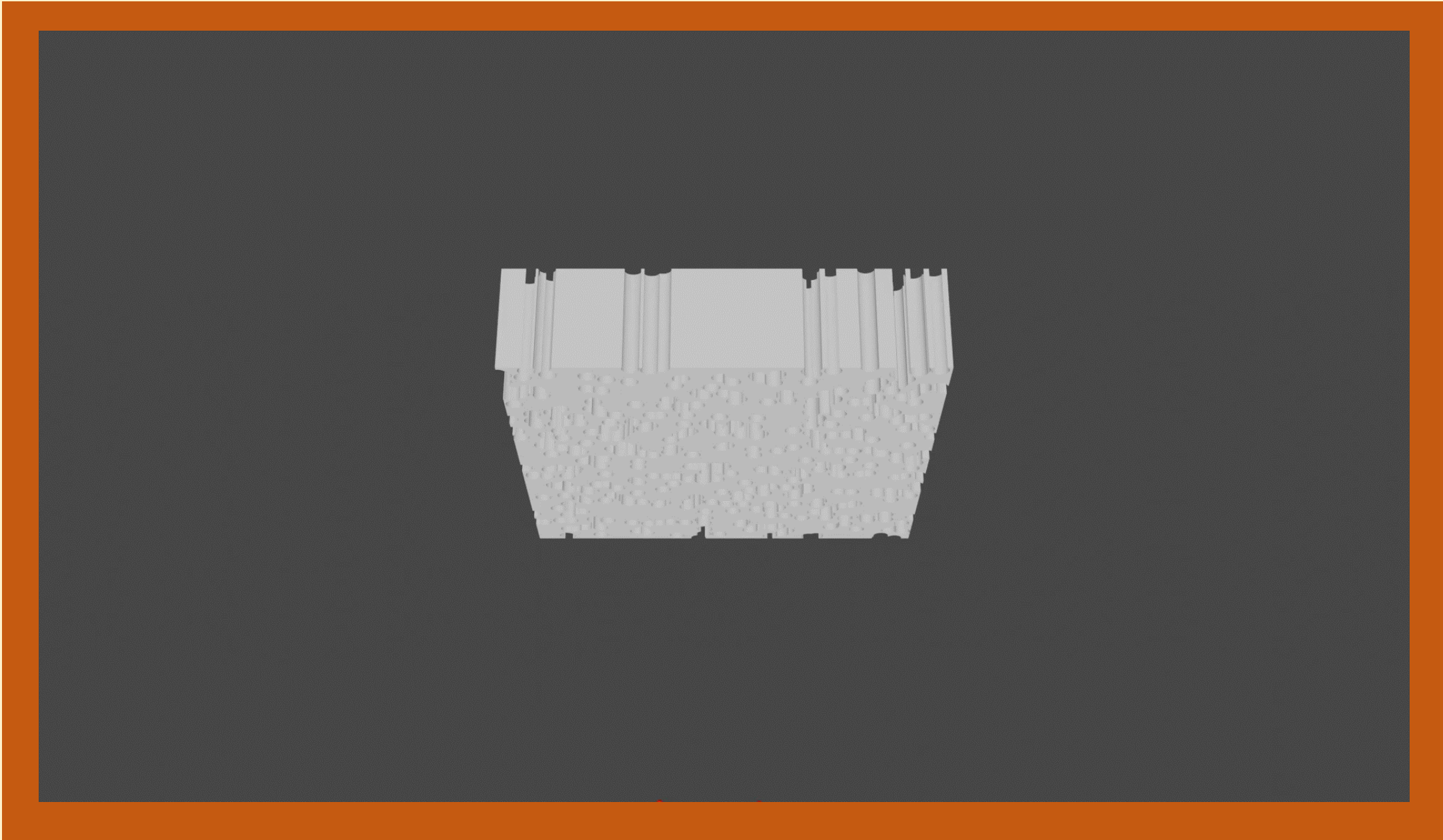
NO

Left to Do

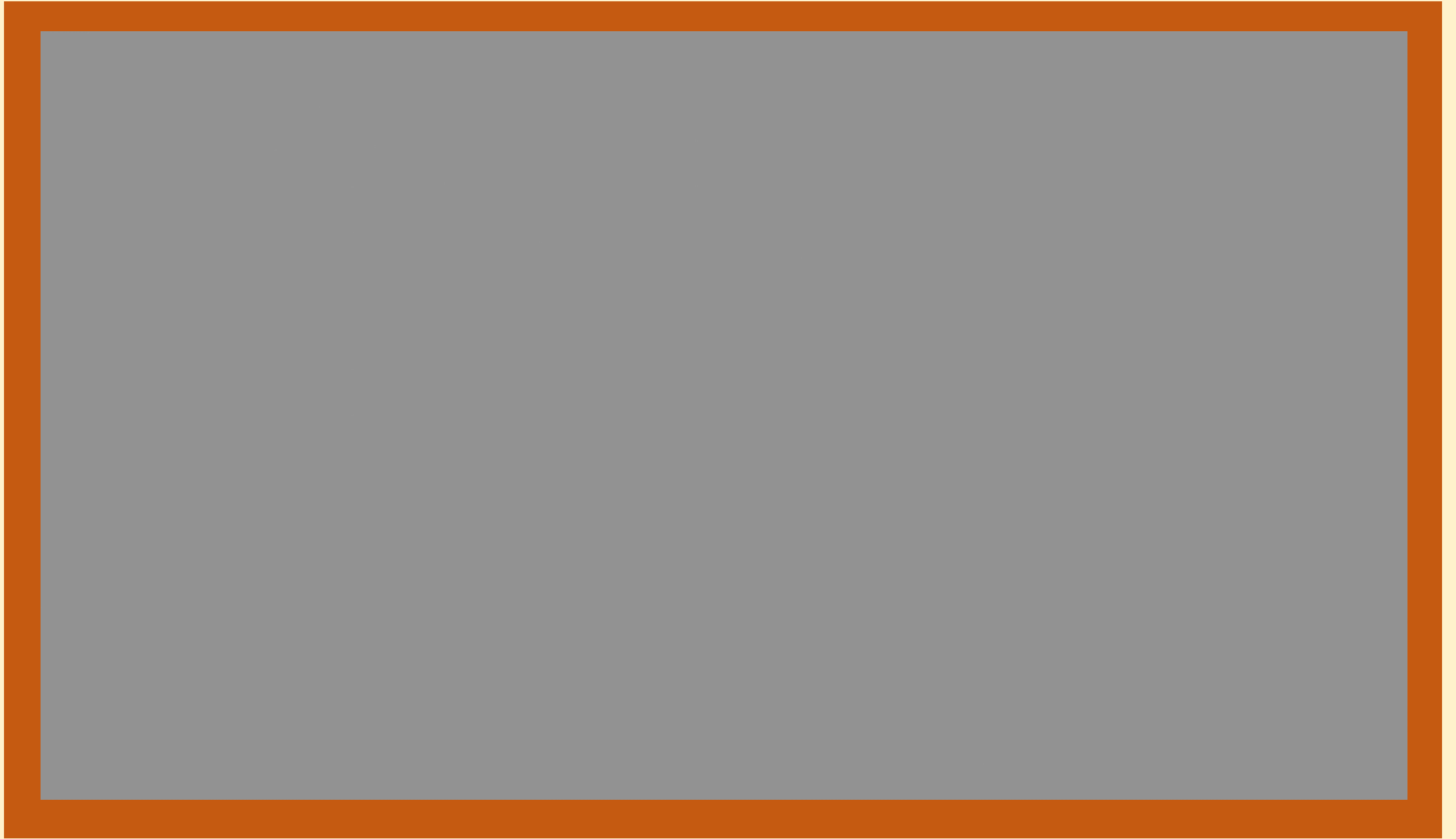
- Fix all bugs/mistakes
- Lighting and colors
- Label or voiceover
- Fall experiment video
- Stitch videos together



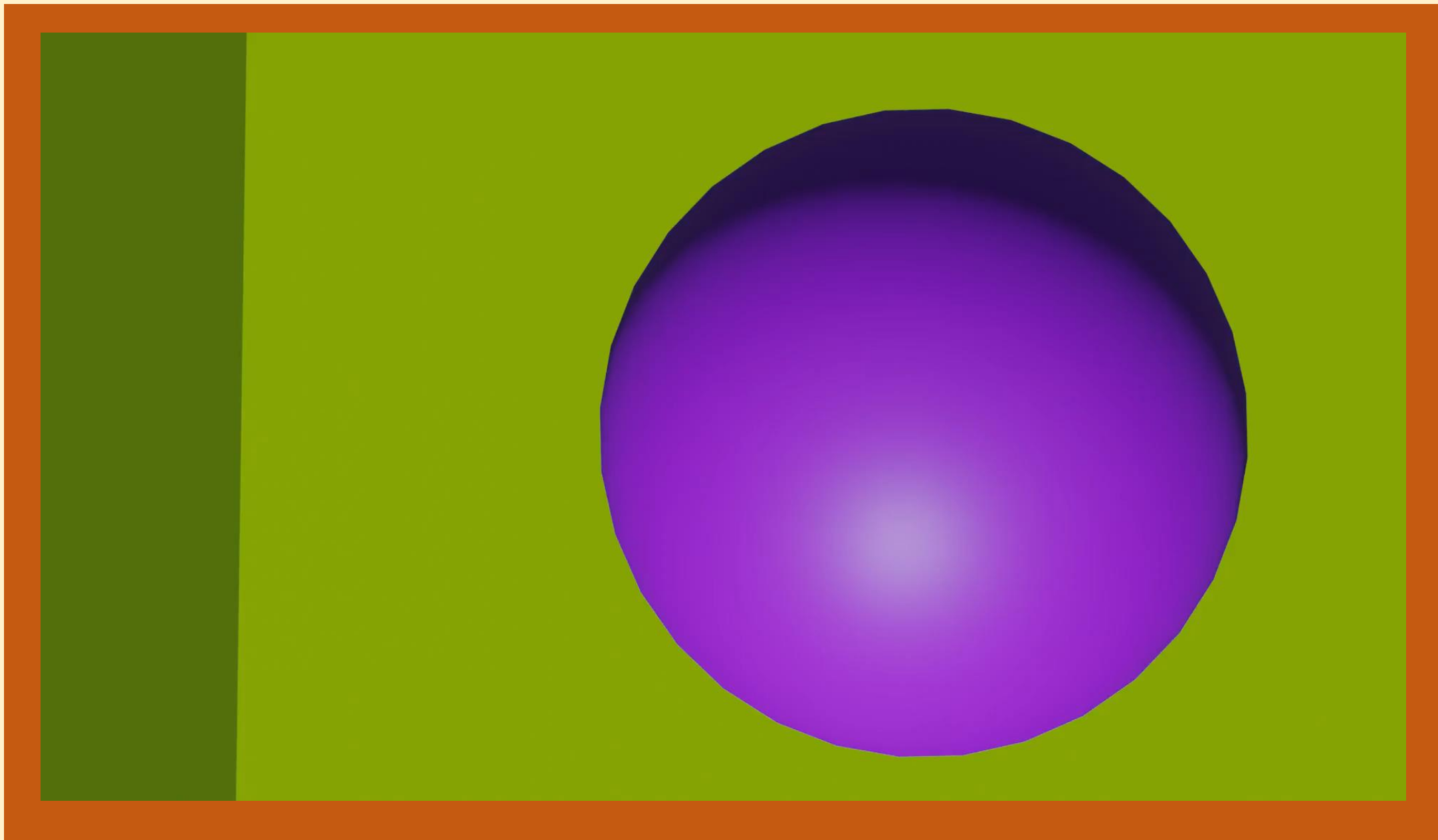


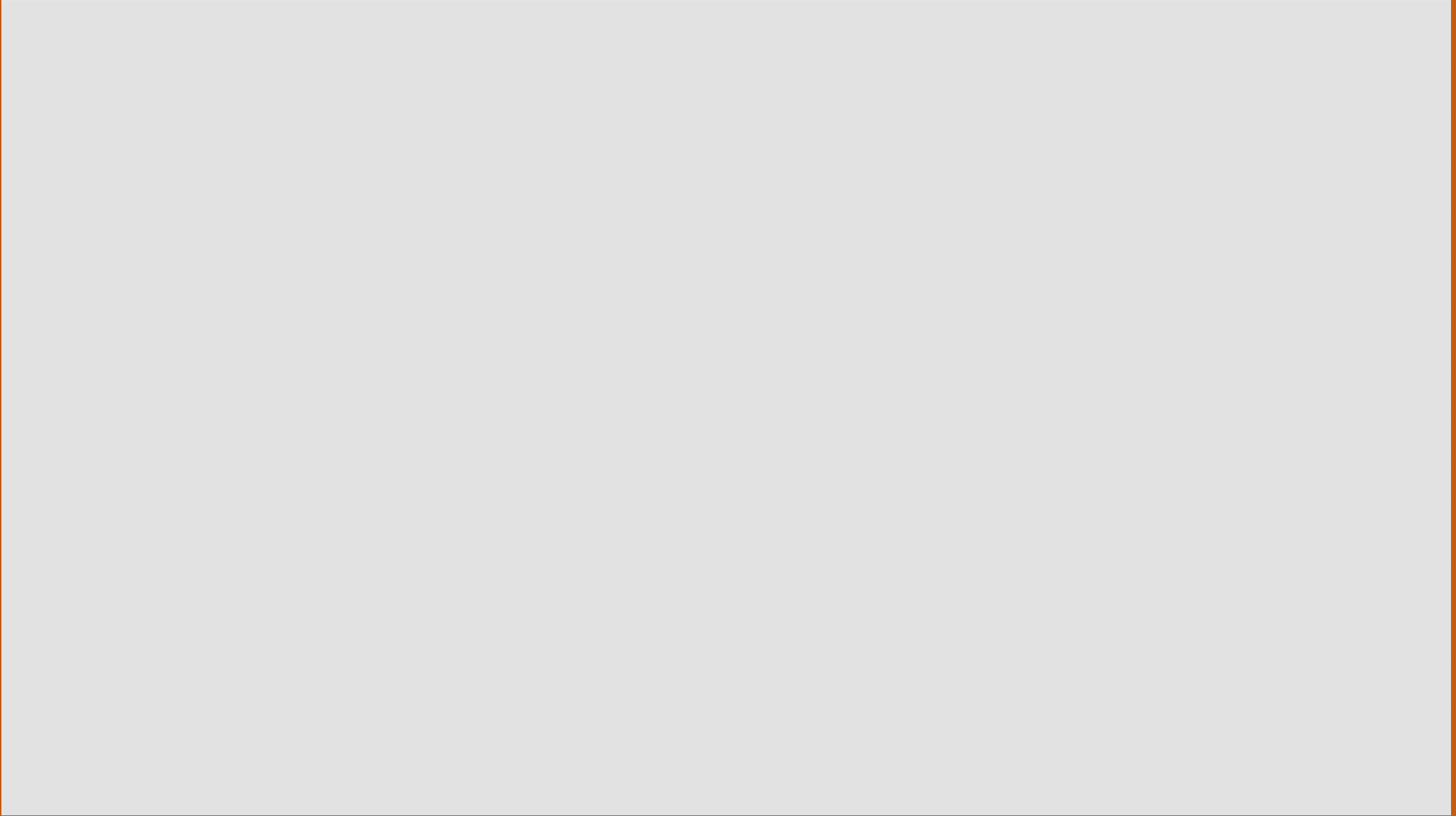


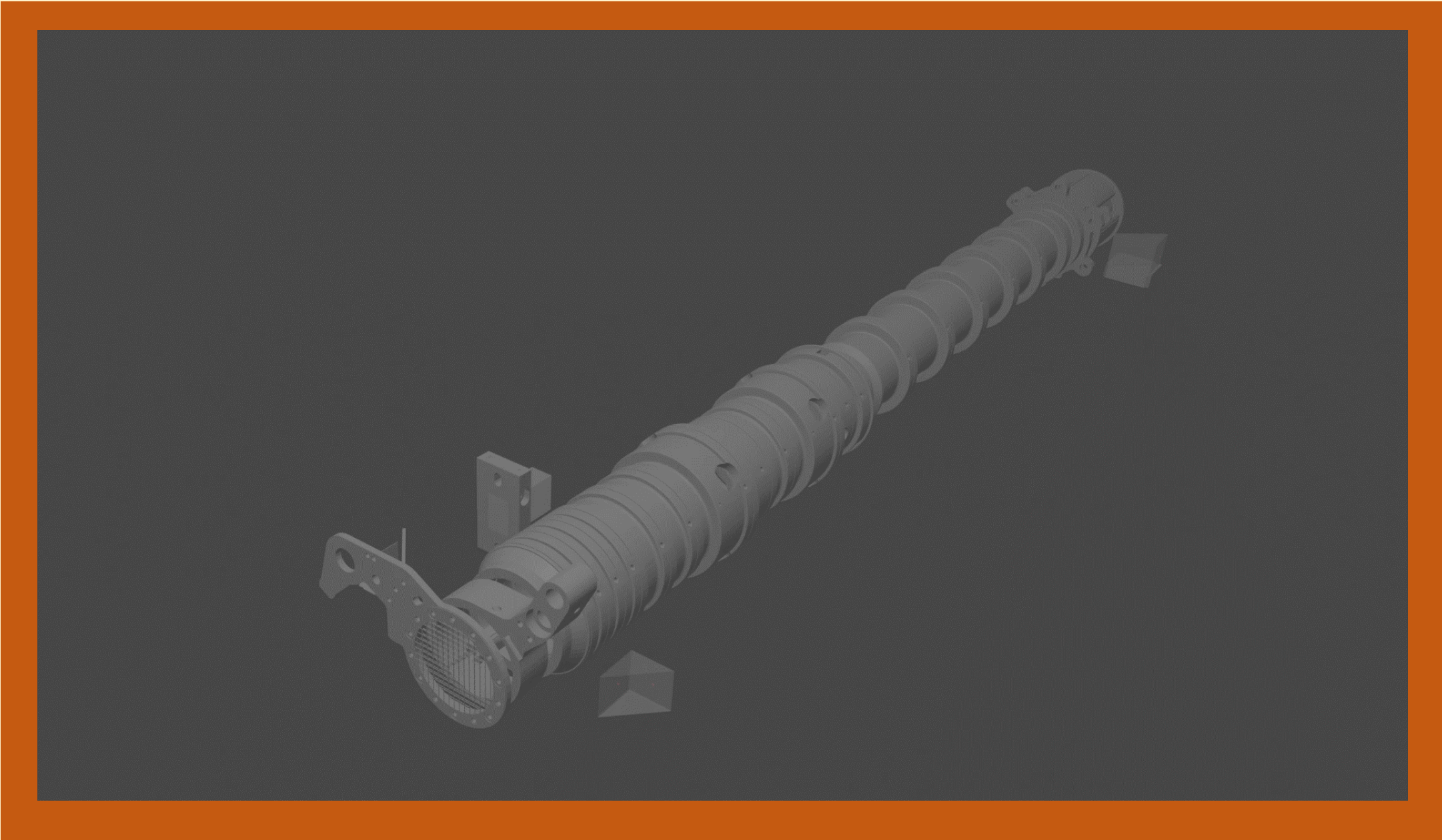


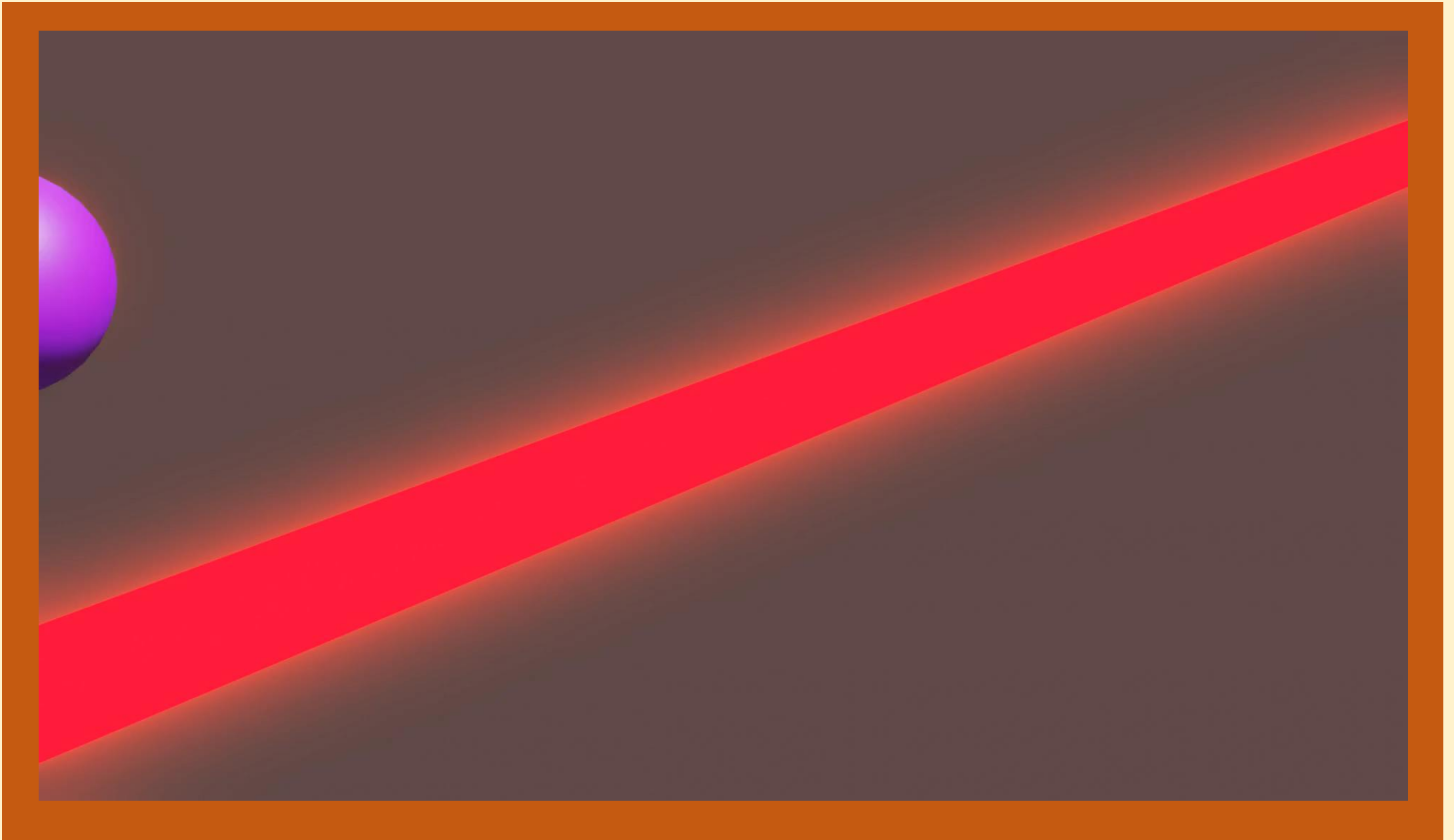






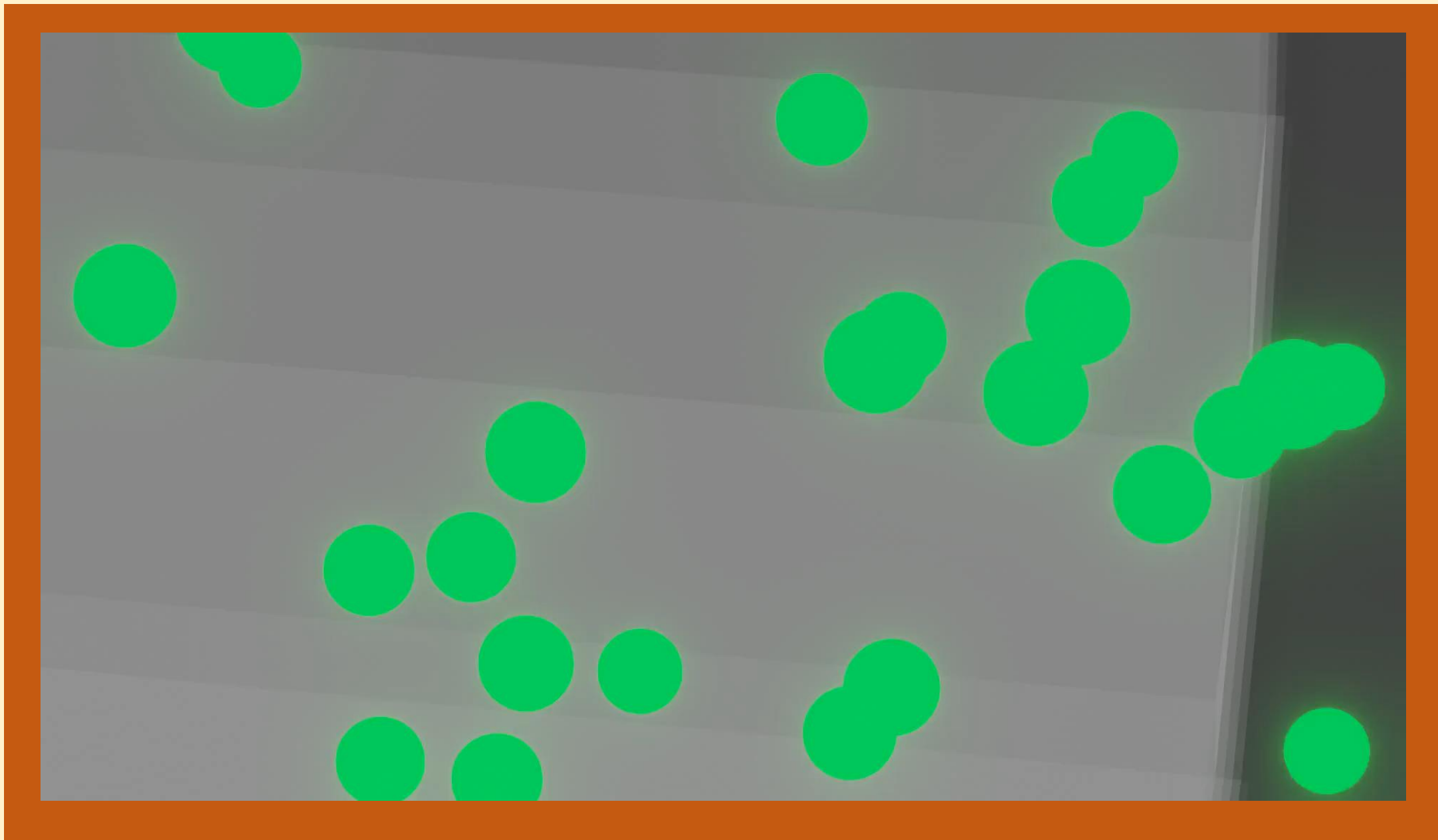












Takeaways

- Learned Blender and bpy code!
- Know AEGIS well
- Visualizations
- What to include
- What to ignore
- How to portray the invisible

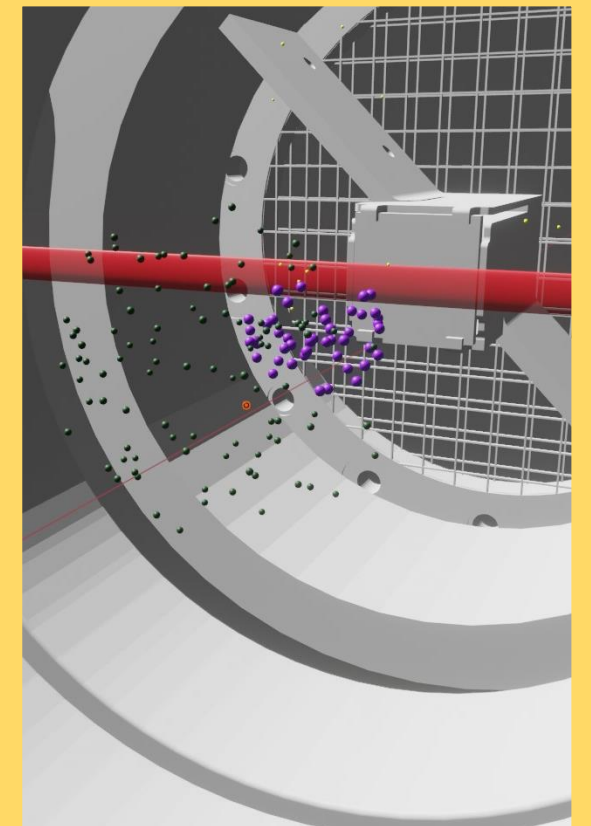
```
View Text Edit Select Format Templates | Text
bpy.data.materials[k.name].node_tree.nodes["Principled
BSDF"].inputs[2].keyframe_insert("default_value", frame=end)

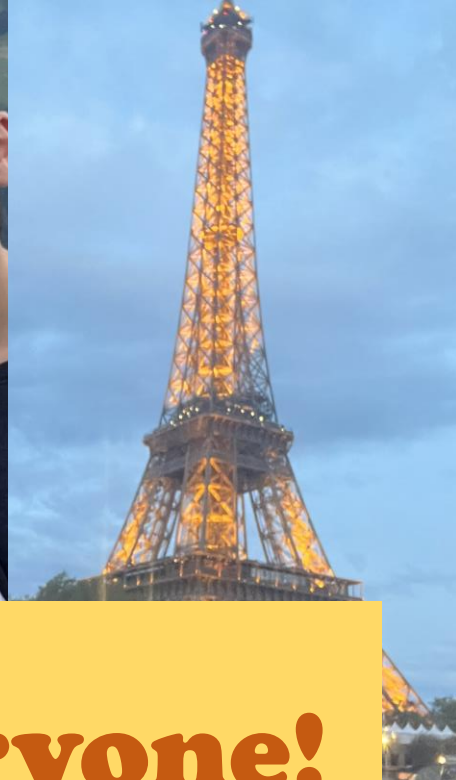
def decay(objekt, framestart, frameend, distance, needsmat = 'yes', needsob = 'yes'):
    bpy.ops.object.select_all(action='DESELECT')
    bpy.data.objects[objekt].select_set(True)
    bpy.context.scene.frame_set(framestart)
    if needsob == 'yes':
        makephotons(objekt, 3)
    if needsmat == 'yes':
        objects = ensureorder(objekt + ' gammas')
        for i in objects:
            addmatuniqueOBJ(i, 'yellow', 'yes')
            reversefade(i, framestart, framestart+1)
    if needsmat == 'yes':
        addmatuniqueOBJ(objekt, 'purple', 'yes')
        fadeobject(objekt, framestart, framestart + 1)
        movephotons(objekt + ' gammas', distance, framestart, frameend)

def randomdecay(listostuff, percent, startexplode, endexplode, length, distance):
    p = percent / 100
    stuff = ensureorder(listostuff)
    tobemurdered = random_sample(stuff, round(p * len(stuff)))
    for i in tobemurdered:
        start = random.randint(startexplode, endexplode)
        decay(i, start, start + length, distance)

def shimmy(group, startframe, endframe, amount, speed):
    for i in ensureorder(group):
        offset = random.randint(1, 5)
        ox, oy, oz = bpy.data.objects[i].location
        currentframe = (startframe + offset)
        bpy.ops.object.select_all(action='DESELECT')
        bpy.data.objects[i].select_set(True)
        while currentframe <= endframe:
            bpy.data.objects[i].location = (ox - amount, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type='Location')
            bpy.context.scene.frame_set(currentframe + speed)
            bpy.data.objects[i].location = (ox + amount, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type='Location')
            bpy.context.scene.frame_set(currentframe + 2*speed)
            bpy.data.objects[i].location = (ox, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type='Location')
            bpy.context.scene.frame_set(currentframe + 3*speed)
            bpy.data.objects[i].location = (ox + amount, oy, oz)
            bpy.ops.anim.keyframe_insert_by_name(type='Location')
            currentframe = currentframe + 4*speed

#listoobj = (gone('positronium', 120, 240))
#rescale('antiprotons')
#randomdecay('todecay', 100, 110, 270, 200, 0.4)
#addmat('Material.009', 'antiprotons')
#makecloud(100, 0.0012, 0.03, (1.43277, -0.013144, 0.019598))
shimmy('antiprotons', 50, 350, 0.001, 3) |
```





Thank You Everyone!

