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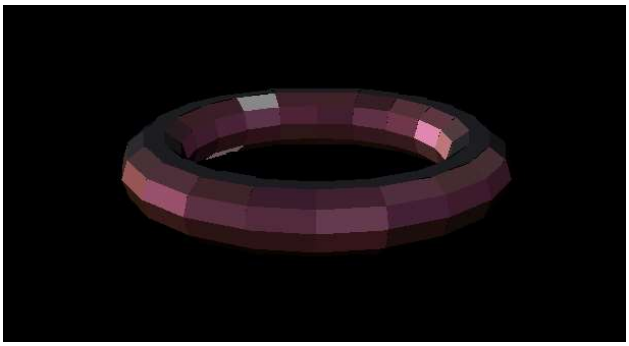
Lab 4: Texture Mapping

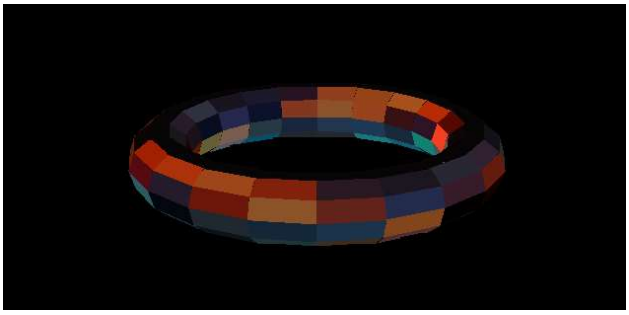
Two texture files: **Star.jpg** and **wrinkles.jpg** are applied on donut and better ball models. Each shading mode is included below.
As expected, the mode with the clearest texture is Phong Shading as it interpolates and calculates texture per pixel.

1. Constant Shading

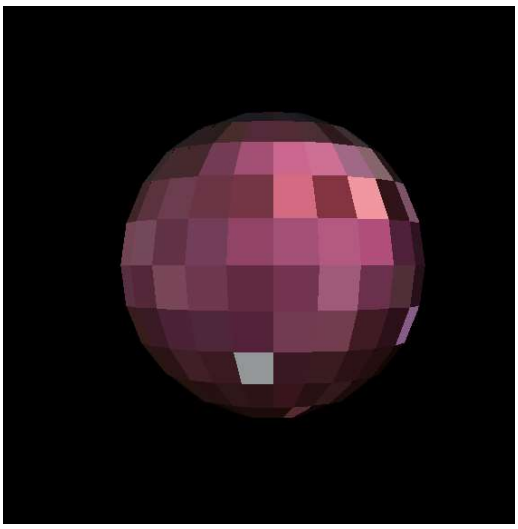
Constant shading is just project 2 implemented with Phong Illumination.



```
#Transformation constants
cam = np.array([0, 1, -3])
pRef = np.zeros(3)

#Illumination constants
n = 100
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([-15, 5, -50])

textureFile = "textures\\Star.jpg"
```



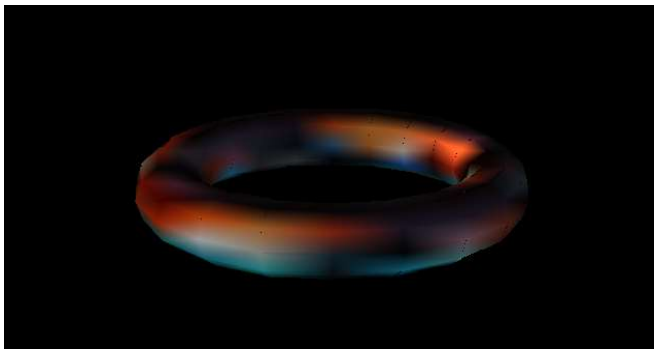
```
#Transformation constants
cam = np.array([0, 1, -3])
pRef = np.zeros(3)

#Illumination constants
n = 100
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([-15, 5, -50])

textureFile = "textures\\wrinkles.jpg"
```

	`#Transformation constants`
	`cam = np.array([0, 0, -6])`
	`pRef = np.zeros(3)`
	
	`#Illumination constants`
	`n = 350`
	`color = [0.9, 0.6, 0.8]`
	`ka = 0.4`
	`kd = 0.4`
	`ks = 0.9`
	`V = np.array([0, 0, 15])`
	`sourceLight = np.array([1, 1, 1])`
	`L = np.array([10, 10, -250])`
	
	`textureFile = "textures\\Star.jpg"`

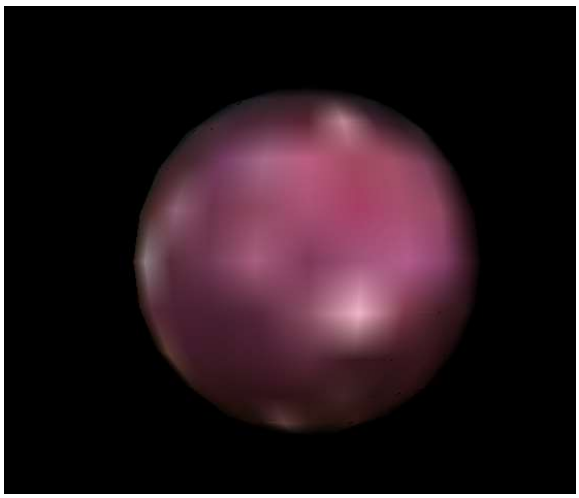
	`#Transformation constants`
	`cam = np.array([0, 0, -6])`
	`pRef = np.zeros(3)`
	
	`#Illumination constants`
	`n = 350`
	`color = [0.9, 0.6, 0.8]`
	`ka = 0.4`
	`kd = 0.4`
	`ks = 0.9`
	`V = np.array([0, 0, 15])`
	`sourceLight = np.array([1, 1, 1])`
	`L = np.array([10, 10, -250])`
	
	`textureFile = "textures\\wrinkles.jpg"`

2. Gouraud Shading

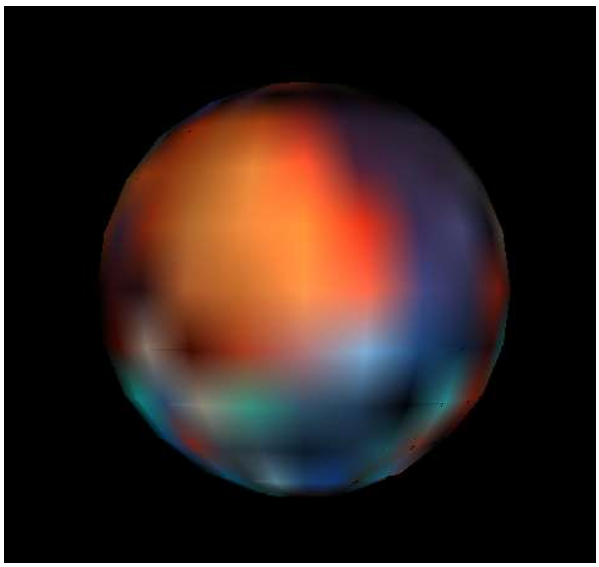
```
#Transformation constants
cam = np.array([0, 1, -3])
pRef = np.zeros(3)

#Illumination constants
n = 100
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([-15, 5, -50])

textureFile = "textures\\Star.jpg"
```



```
#Transformation constants
cam = np.array([0, 1, -3])
pRef = np.zeros(3)

#Illumination constants
n = 100
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([-15, 5, -50])

textureFile =
"textures\\wrinkles.jpg"
```

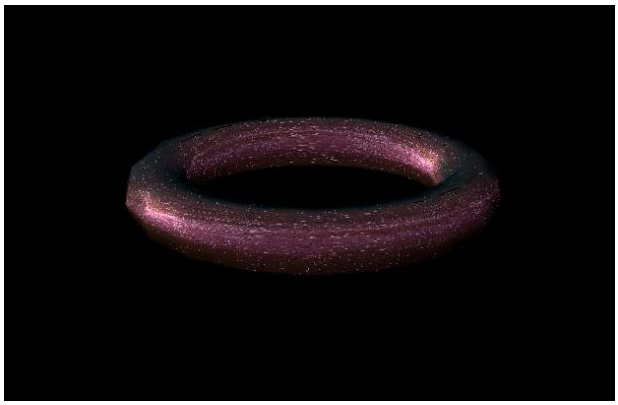


```
#Transformation constants
cam = np.array([1, 0, -6])
pRef = np.zeros(3)

#Illumination constants
n = 350
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([10, 10, -250])

textureFile = "textures\\Star.jpg"
```

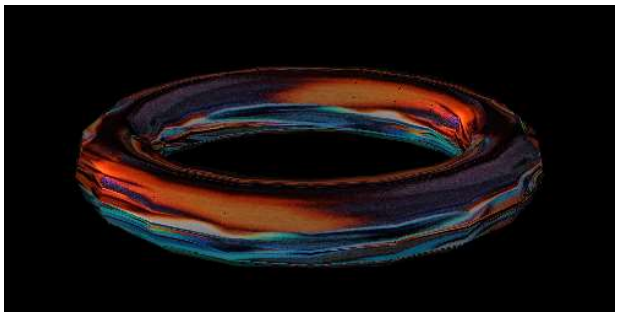


```
#Transformation constants
cam = np.array([1, 0, -6])
pRef = np.zeros(3)

#Illumination constants
n = 350
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([10, 10, -250])

textureFile =
"textures\\wrinkles.jpg"
```

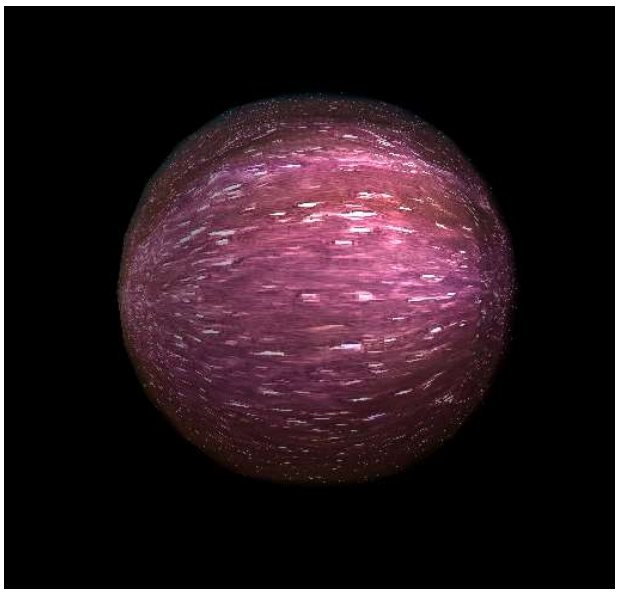
1. Phong Shading



```
#Transformation constants
cam = np.array([0, 1, -3])
pRef = np.zeros(3)

#Illumination constants
n = 15
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([-15, 5, -50])

textureFile = "textures\\Star.jpg"
```



```
#Transformation constants
cam = np.array([0, 1, -3])
pRef = np.zeros(3)

#Illumination constants
n = 15
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
sourceLight = np.array([1, 1, 1])
L = np.array([-15, 5, -50])

textureFile = "textures\\wrinkles.jpg"
```



```
#Transformation constants
cam = np.array([1, 0, -6])
pRef = np.zeros(3)

#Illumination constants
n = 350
color = [0.9, 0.6, 0.8]
ka = 0.4
kd = 0.4
ks = 0.9
V = np.array([0, 0, 15])
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L = np.array([10, 10, -250])

textureFile = "textures\\Star.jpg"
```

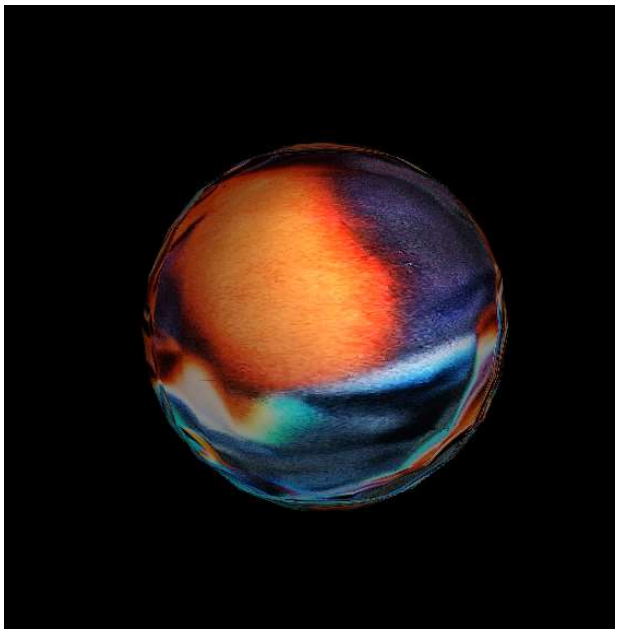

```
#Transformation constants
cam = np.array([1, 0, -6])
pRef = np.zeros(3)

#Illumination constants
n = 350
color = [0.9, 0.6, 0.8]
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textureFile = "textures\\wrinkles.jpg"
```