

1. Original

position

2. Position in

the scene

3. Position in front of the camera

4. Position inside the

clipping volume

*Model space*

*Scene space*

*Camera space*

*Clipping space*

vertex (x,y,z,1)

vertex normal vector <dx,dy,dz,0>

*point* light position (x,y,z,1)

The surface defined around the vertex

Θ

vertex

(x,y,z,1)

vertex normal vector <dx,dy,dz,0>

*point* light position (x,y,z,1)

The surface defined around the vertex

Θ

Θ

incoming  
light ray

<dx,dy,dz,0>

reflected light ray

<dx,dy,dz,0>

vertex

(x,y,z,1)

*point* light position (x,y,z,1)

incoming  
light ray

<dx,dy,dz,0>

reflected light ray

<dx,dy,dz,0>

Light scattering

vertex

(x,y,z,1)

*point* light position (x,y,z,1)

incoming  
light ray

<dx,dy,dz,0>

reflected light ray

<dx,dy,dz,0>

*camera* position (x,y,z,1)

to camera vector

<dx,dy,dz,0>

Φ

vertex

(x,y,z,1)

vertex normal vector <dx,dy,dz,0>

*point* light position (x,y,z,1)

incoming  
light ray

<dx,dy,dz,0>

reflected light ray

<dx,dy,dz,0>

P

L

N

vertex

(x,y,z,1)

vertex normal vector <dx,dy,dz,0>

*point* light position (x,y,z,1)

incoming  
light ray

<dx,dy,dz,0>

reflected light ray

<dx,dy,dz,0>

P

L

N

P

R

*Spotlight* position (x,y,z,1)

*Spotlight* direction <dx,dy,dz,0>

Φ

*Cone angle*

fragment receives light

(x,y,z,1)

fragment

receives no light

(x,y,z,1)

to\_frag

<dx,dy,dz,0>

*Area light*(side view)

*light* direction <dx,dy,dz,0>