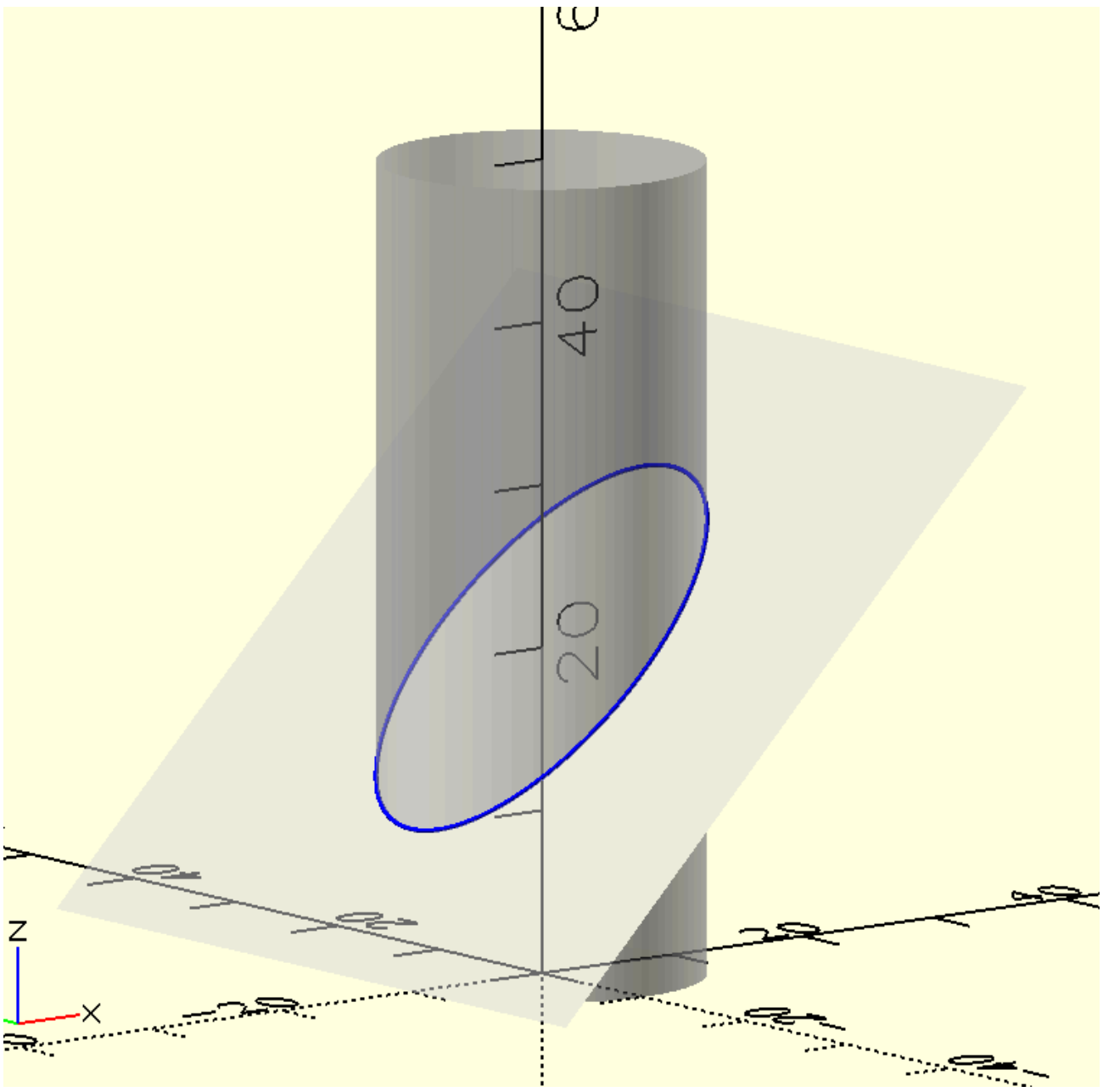
In [2]:
```
%reload_ext autoreload
%autoreload 2
from openscad3 import *
set_printoptions(suppress=True)
```

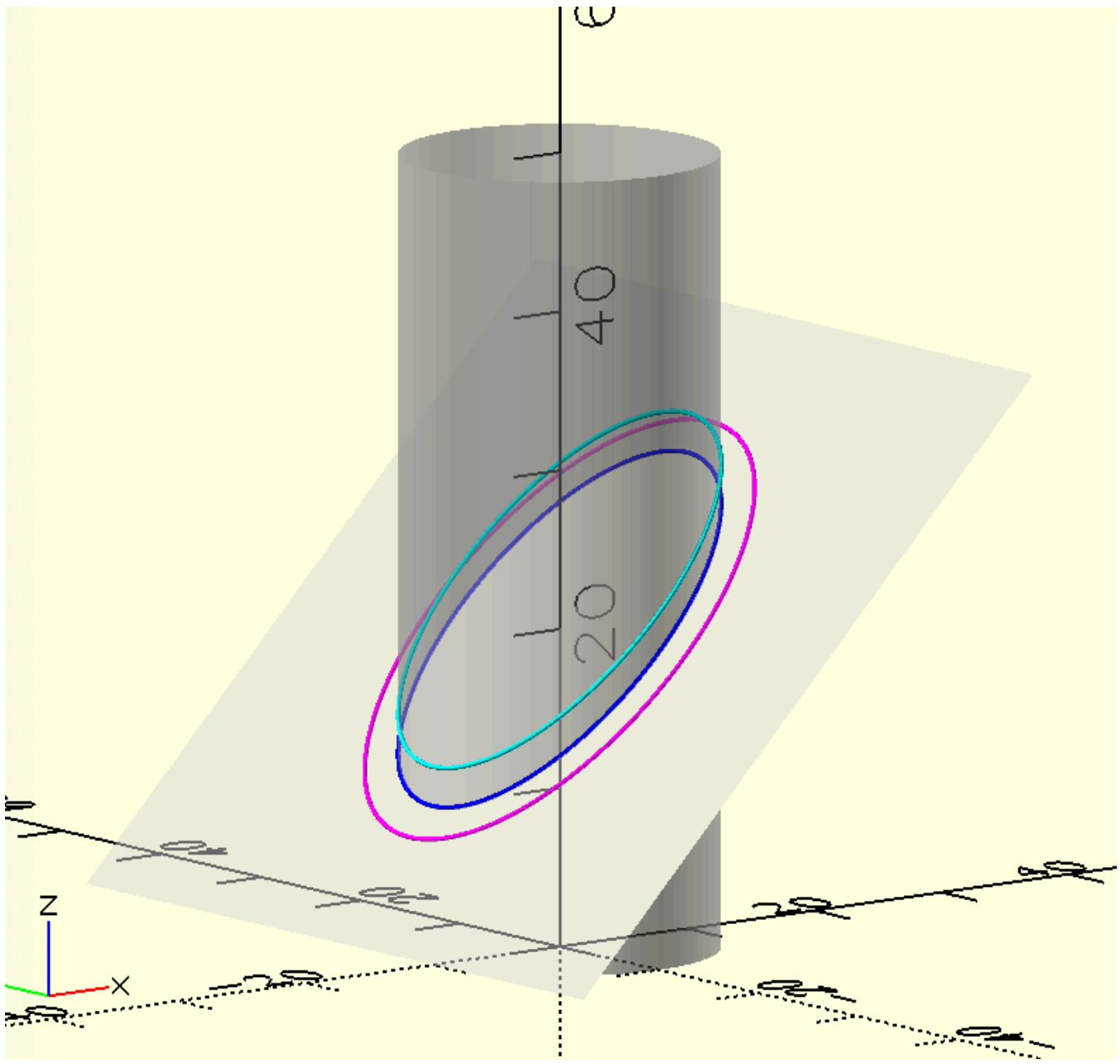
find an intersection line between 2 surfaces

In [17]:
```
a=cylinder(r=10,h=50,s=100)
b=plane([-1,0,1],[50,50],[0,0,20])
l1=ip_sol2sol(b,a)

fo(f'''
%{swp(a)}
%{swp_surf(b)}
color("blue") for(p={[l1]}) p_line3dc(p,.3);

''')
```



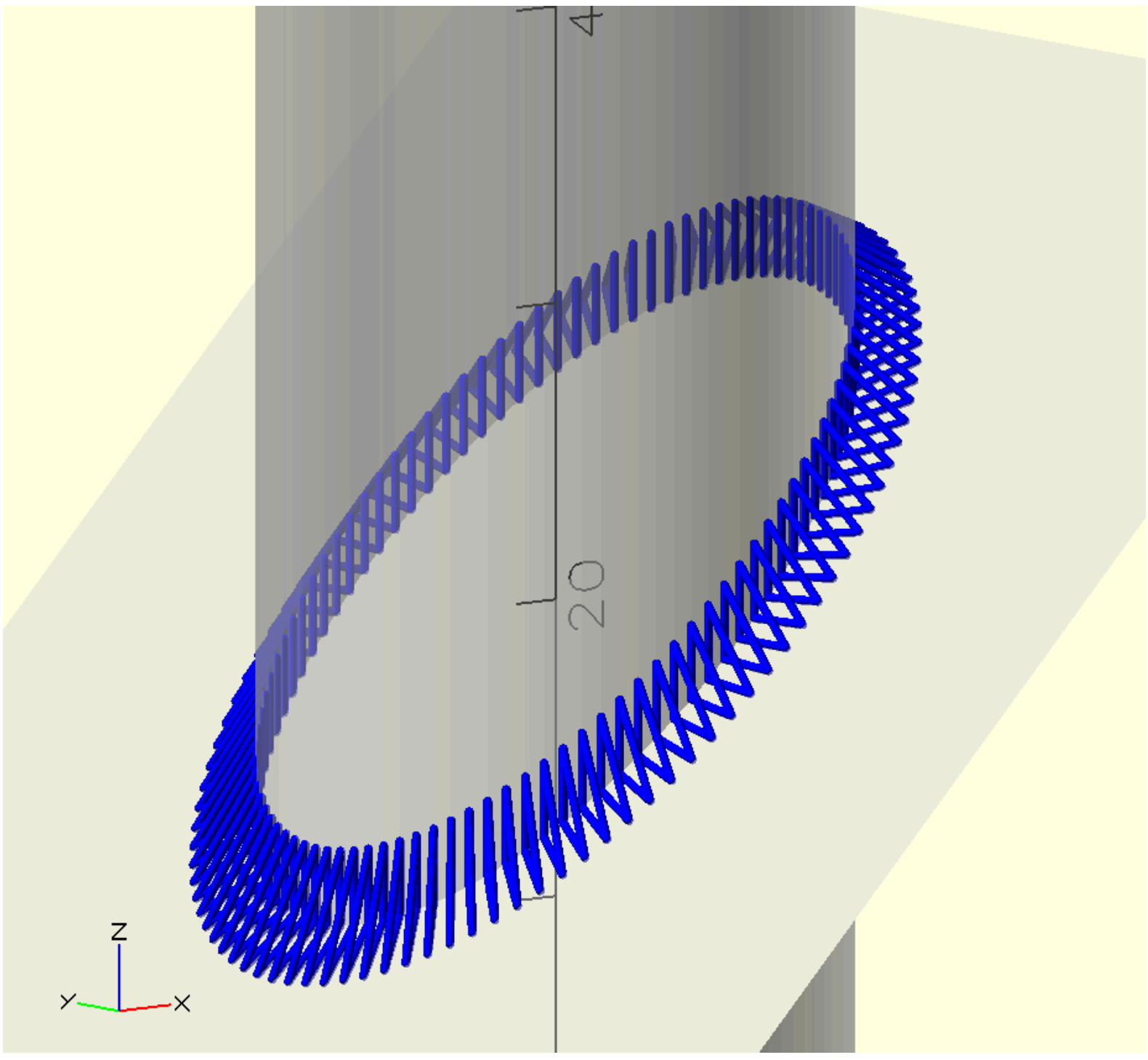
offset the intersection line on both surfaces to an amount roughly 1/2 of fillet radius

In [18]:
```
r=5
a=cylinder(r=10,h=50,s=100)
b=plane([-1,0,1],[50,50],[0,0,20])
l1=ip_sol2sol(b,a)
l2=o_3d(l1,b,r/2)
l3=i_p_p(a,l1,r/2)
fo(f'''
%{swp(a)}
%{swp_surf(b)}
color("blue") for(p={[l1]}) p_line3dc(p,.3);
color("magenta") for(p={[l2]}) p_line3dc(p,.3);
color("cyan") for(p={[l3]}) p_line3dc(p,.3);


''')
```



re-orient the lines such that there are 'n' lines of 3 points each

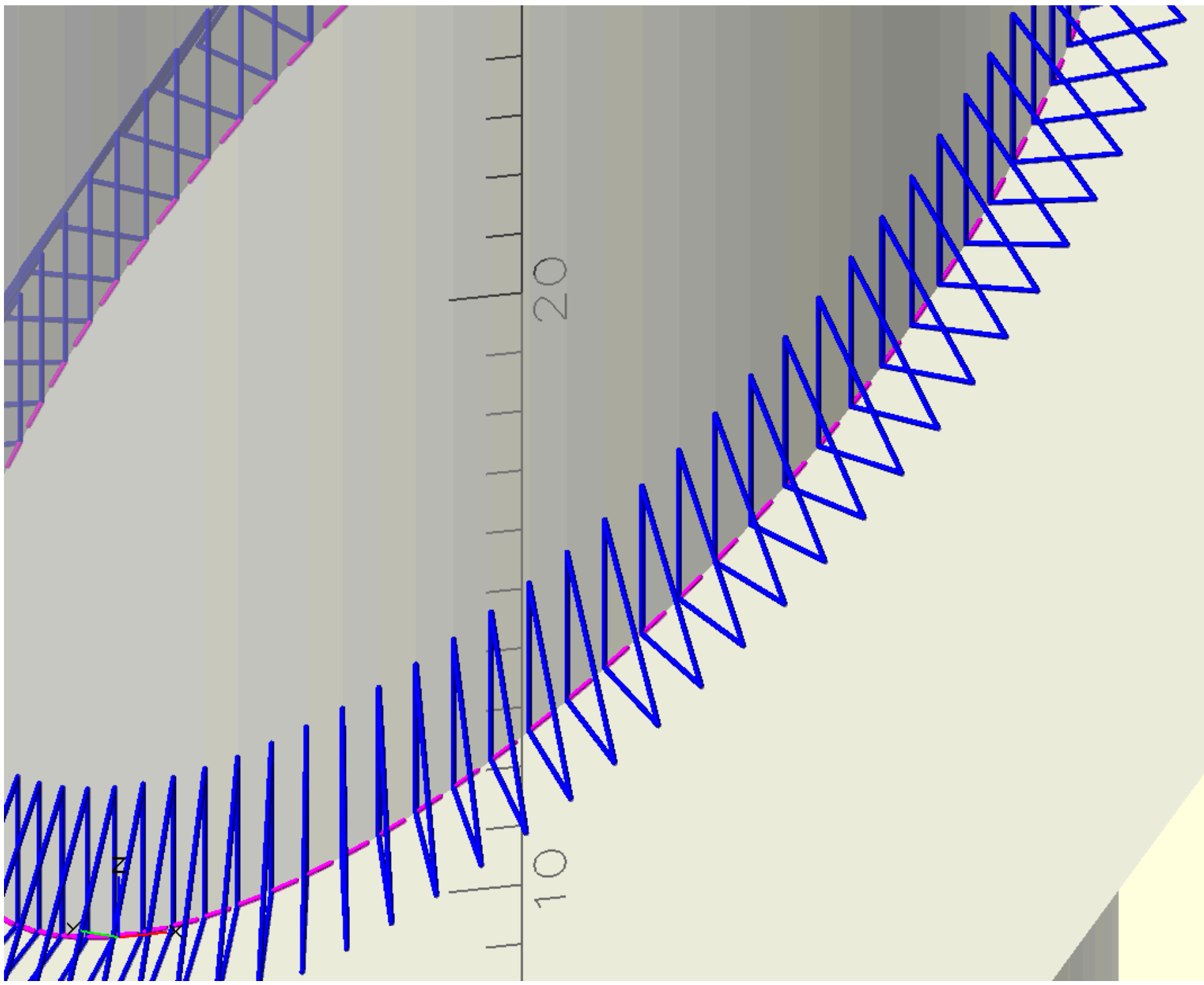
In [19]:
```
r=5
a=cylinder(r=10,h=50,s=100)
b=plane([-1,0,1],[50,50],[0,0,20])
l1=ip_sol2sol(b,a)
l2=o_3d(l1,b,r/2)
l3=i_p_p(a,l1,r/2)
l4=cpo([l1,l2,l3])
fo(f'''
%{swp(a)}
%{swp_surf(b)}
color("blue") for(p={l4}) p_line3dc(p,.3);



''')
```



normals to be defined for each 3 points list for creating arcs in 3d space

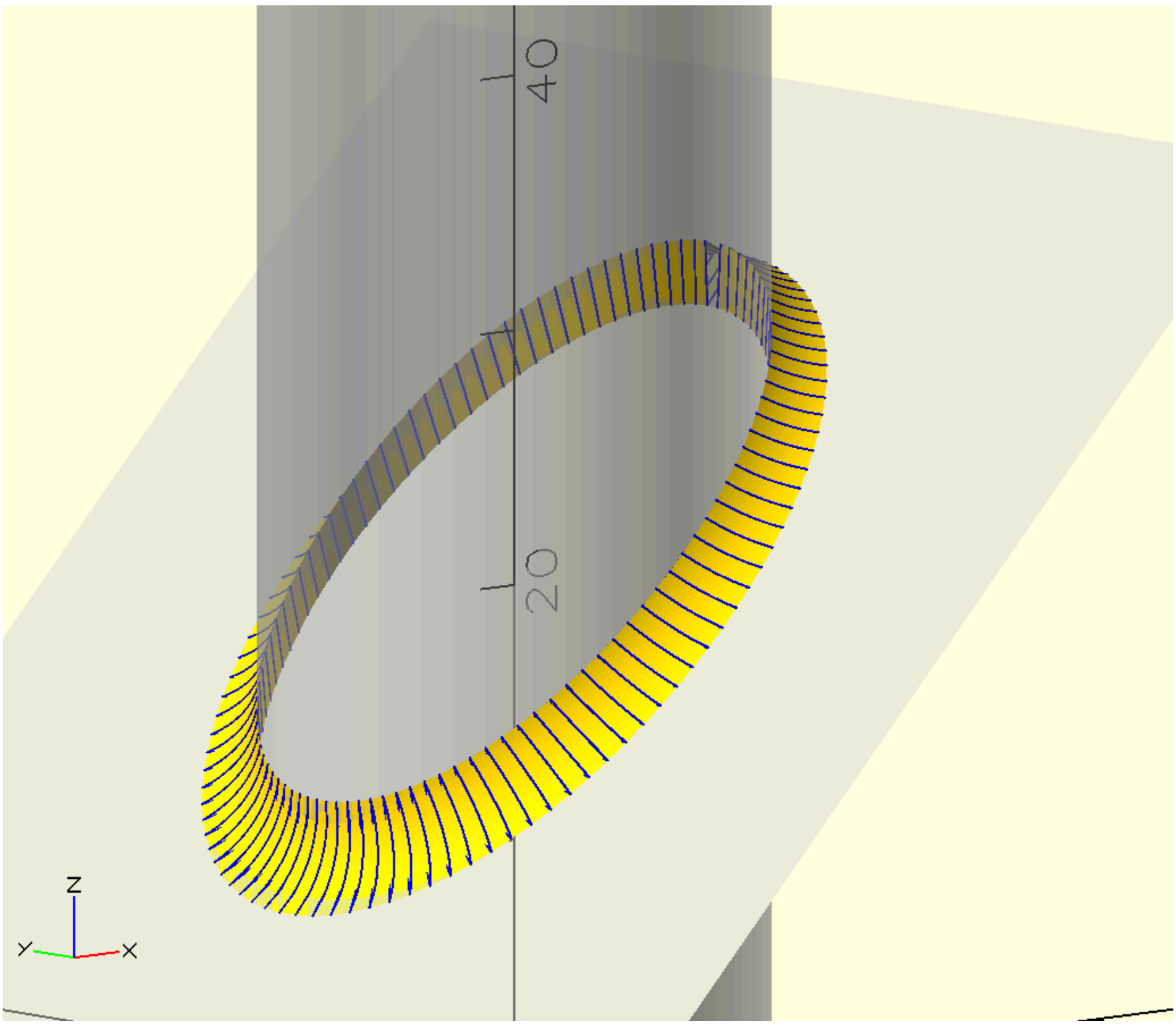
In [20]:

```
r=5
a=cylinder(r=10,h=50,s=100)
b=plane([-1,0,1],[50,50],[0,0,20])
l1=ip_sol2sol(b,a)
l2=o_3d(l1,b,r/2)
l3=i_p_p(a,l1,r/2)
l4=cpo([l1,l2,l3])
n1=i_p_t(l1)
l5=array([array(l1),array(l1)+n1*.5]).transpose(1,0,2).tolist()
fo(f'''
%{swp(a)}
%{swp_surf(b)}
color("blue") for(p={l4}) p_line3dc(p,.1);
color("magenta") for(p={l5}) p_line3d(p,.1);


''')
```



define arc with relevant points for each 3 points list

In [21]:
```
r=5
a=cylinder(r=10,h=50,s=100)
b=plane([-1,0,1],[50,50],[0,0,20])
l1=ip_sol2sol(b,a)
l2=o_3d(l1,b,r/2)
l3=i_p_p(a,l1,r/2)
l4=cpo([l1,l2,l3])
n1=i_p_t(l1)
fillet1=[arc_2p_3d(n1[i],l4[i][1],l4[i][2],r)+[l4[i][0]] for i in range(len(l4))]
fo(f'''
%{swp(a)}
%{swp_surf(b)}
color("blue") for(p={fillet1}) p_line3dc(p,.1);
{swp_c(fillet1)}


''')
```


40
20
Z
Y
X