```
clear all
clc
close all
```

```
cs=crystalSymmetry('432')
```

```
cs = crystalSymmetry

  symmetry: 432
  elements: 24
  a, b, c : 1, 1, 1
```

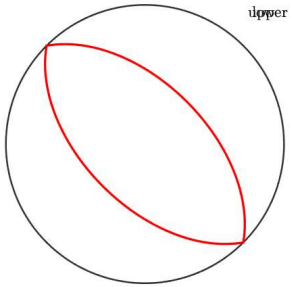
```
hkl=Miller(1,1,1,cs)
```

```
hkl = Miller (432)
  h k l
  1 1 1
```

Plotting the normal and the traces of the planes

```
figure
hold on
% the normal direction
plot(hkl,'upper','labeled')
hold off
```

```
figure
hold on
% the trace of the corresponding lattice plane
plot(hkl,'plane','linecolor','r','linewidth',2)
hold off
```



Define orientation using Miller indices

```
n=Miller(0,0,1,'hkl',cs) % plane normal || ND
```

```
n = Miller (432)
  h k l
  0 0 1
```

```
b=Miller(9,1,0,'uvw',cs) % direction parallel to RD
```

```
b = Miller (432)
  u v w
  9 1 0
```

```
ori=orientation.byMiller(n,b)
```

```
ori = orientation (432 → xyz)

  Bunge Euler angles in degree
    phi1    Phi   phi2
  353.66      0      0
```

```
hkl1=ori*hkl
```

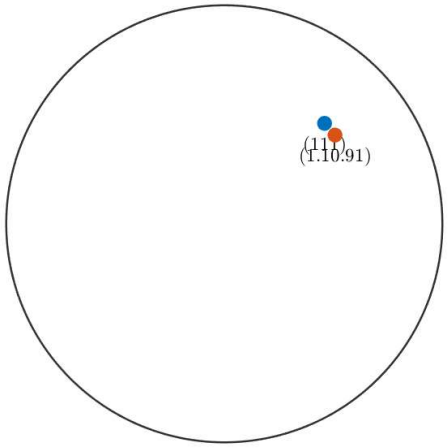
```
hkl1 = vector3d
```

```
        x        y        z
  1.10432 0.883452        1
```

```
hkl11=Miller(hkl1.x,hkl1.y,hkl1.z,cs)
```

```
hkl11 = Miller (432)
       h      k      l
  1.1043 0.8835      1
```

```
%plotx2north
figure
% the normal direction
plot(hkl,'upper','labeled')
hold on
plot(hkl11,'upper','labeled')
hold off
```




```
ori.matrix
```

```
ans = 3×3
    0.9939    0.1104         0
   -0.1104    0.9939         0
         0         0    1.0000
```

```
methods(ori)
```

```
Methods for class orientation:

BCV                     Euler                   KLCV                    LSCV                    R

Static methods:

Bagaryatsky             Bain                    Burger                  Burgers                 G
```

(hkl) planes of random orientations

```
hkl=Miller(1,0,0,cs)
```

```
hkl = Miller (432)
  h k l
  1 0 0
```

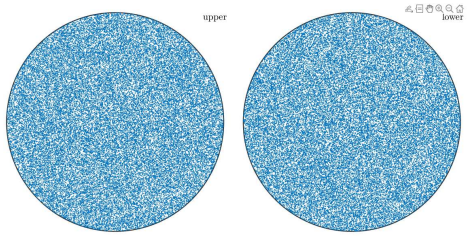
```
r_ori=orientation.rand(100000,cs)
```

```
r_ori = orientation (432 → xyz)
  size: 100000 x 1

  show Euler angles
```

```
rhkl=r_ori*hkl
```

```
rhkl = vector3d
 size: 100000 x 1

  show vectors
```

```
figure
plot(rhkl)
```


upper
lower