Tutorial 68: Virtual sensing on surface data of geometric bodies

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Complete List of all Tutorials with Publishable MATLAB Files of this Solid-Geoemtries Toolbox

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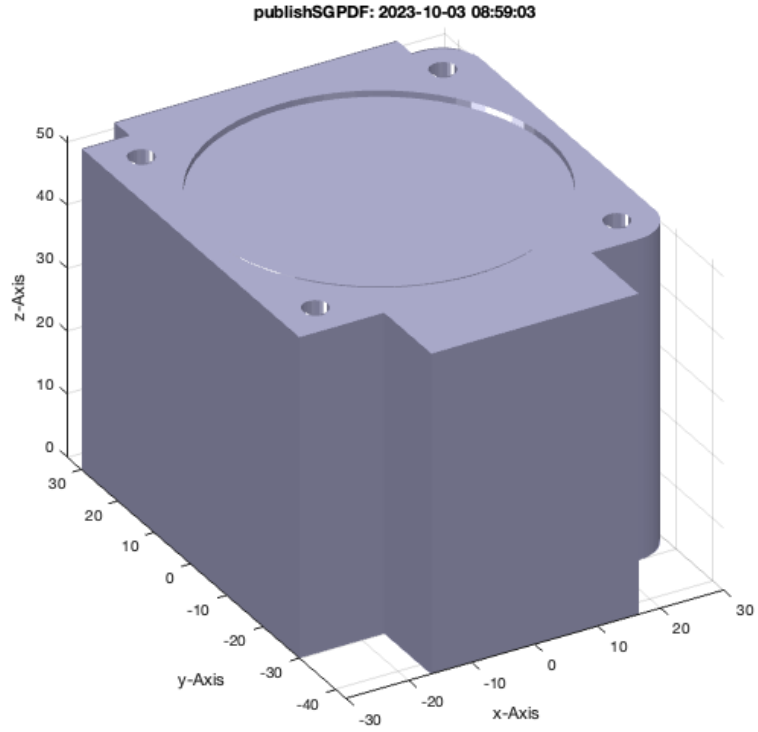
Motivation for this tutorial: (Originally SolidGeometry 5.1 required)

function VLFL_EXP68

```
% We define a solid geomtry
SGcompass; SG=ans;
```

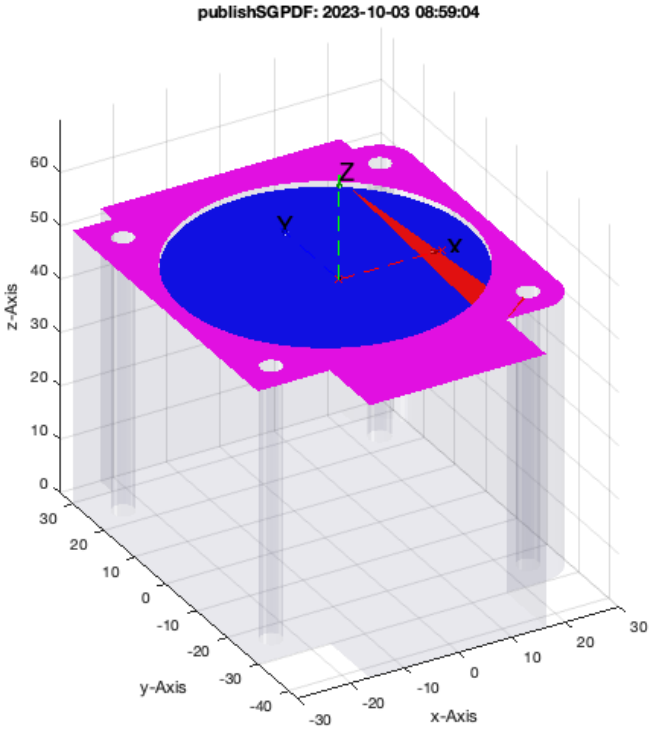


Erklärung einiger Grundsätzlichen Funktionen

FSofSGnorm für das Suchen von Flächen mit definierten Normalenvektor

```
FSofSGnormal(SG,[0 0 1])
```

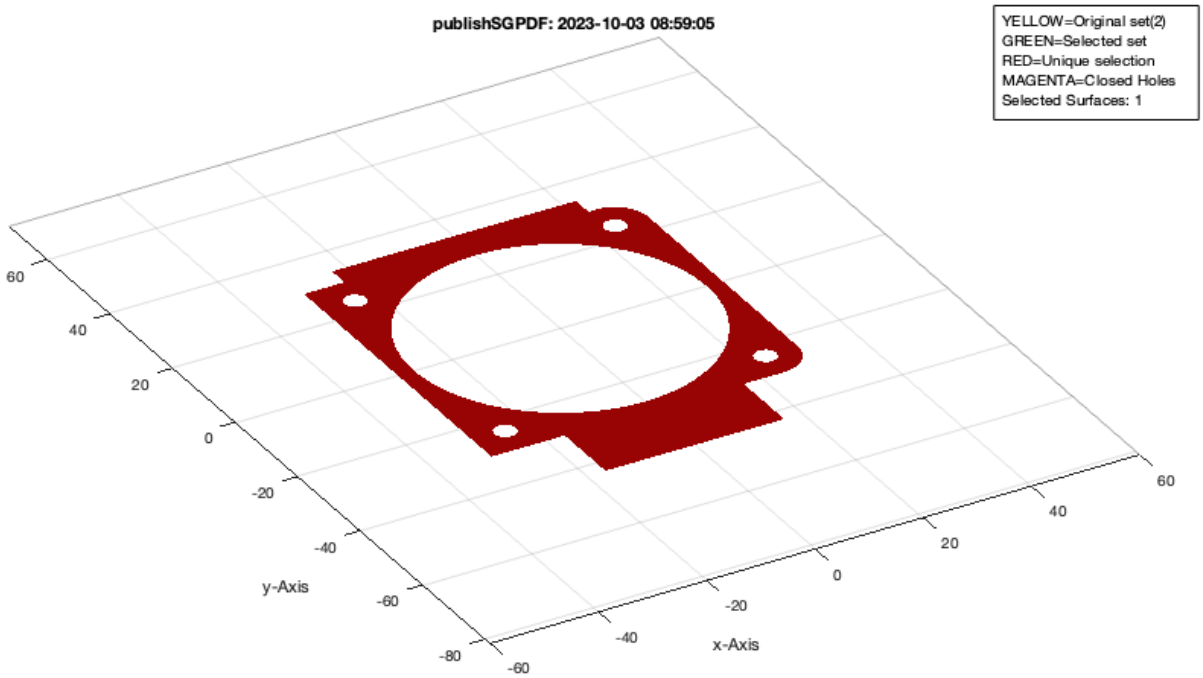
```
ans =
  2×1 cell array
    {265×1 double}
    { 71×1 double}
```



FSselect für das Suchen und Auswählen von Flächen

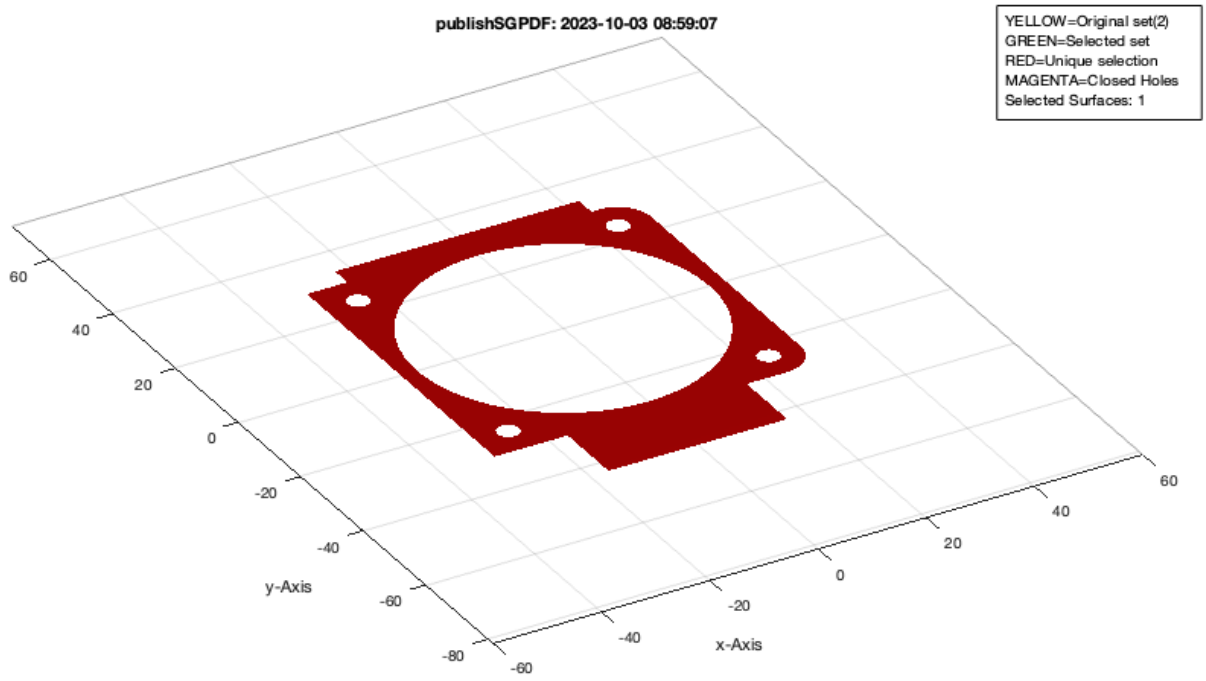
```
FSselect(SG,[0 0 1],'front');
```

```
FSselect: Originally 2 face ==> 1 faces selected
```



```
FSselect(SG,[0 0 1],'front',1); FIL=ans
```

```
FSselect: Originally 2 face ==> 1 faces selected
FIL =
  1×1 cell array
    {265×1 double}
```




```
C=SG; C.FIL=FIL;
```

Analyse von Listen von Objektklassen der SG-Lib mit der Funktion SGcast

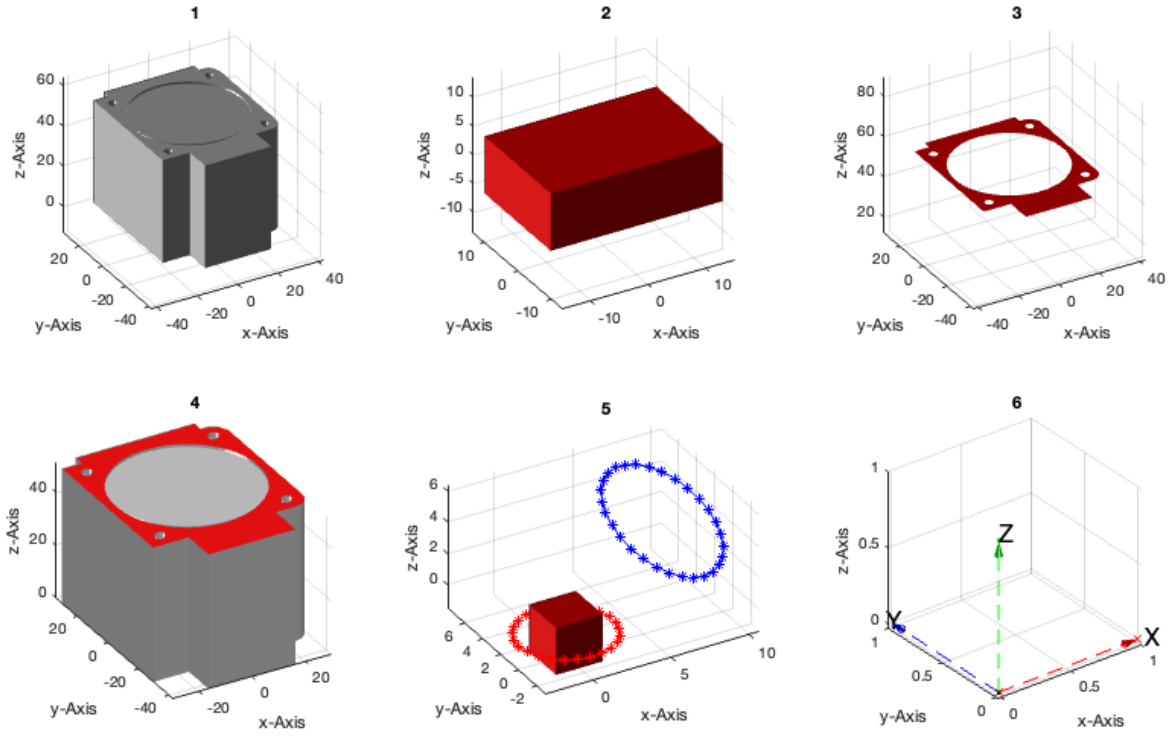
```
A={SG,SGbox,C,{SG,C},{SGbox([3 3 3]), PLcircle(3),VLtransR(VLaddz(PLcircle(4),10),rot(-pi/3,pi/3,pi/3))},eye(4)}

B=SGcast(A)
B{:}
```

```
A =
  1×6 cell array
  Columns 1 through 5
    {1×1 struct}    {1×1 struct}    {1×1 struct}    {1×2 cell}    {1×3 cell}
  Column 6
    {4×4 double}
B =
  1×6 cell array
    {'_SG'}    {'_SG'}    {'_SGFS'}    {1×2 cell}    {1×3 cell}    {'_T4'}
ans =
    '_SG'
ans =
    '_SG'
ans =
    '_SGFS'
ans =
  1×2 cell array
    {'_SG'}    {'_SGFS'}
ans =
  1×3 cell array
    {'_SG'}    {'_CPL'}    {'_CVL'}
ans =
```

```
'_T4'
```

Plotten von Listen von Objekten unterschiedlicher Objektklassen der SG-Lib mit der Funktion SGcast

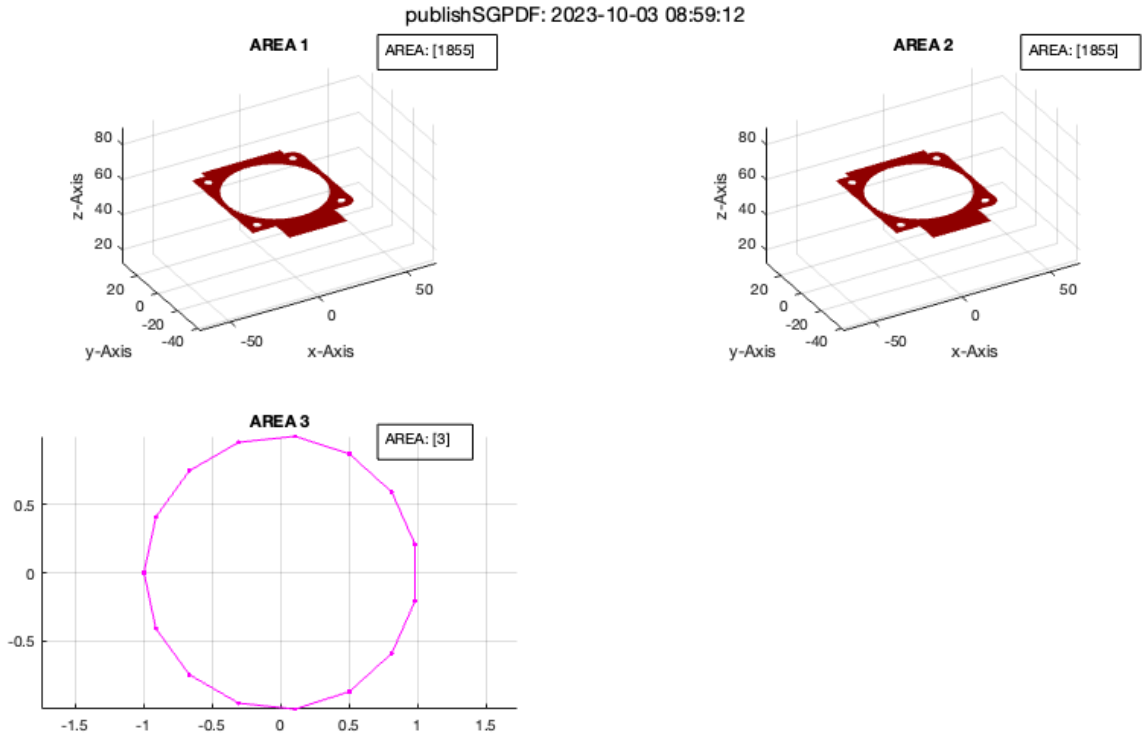
```
SGfigure; SGcastplot(A)
```



Abfragen von Eigenschaften

```
SGfeature(C,'area')
SGfeature({C,C, PLcircle(1)},'area')
```

```
SGfeature: Direct element command: area
nn =
     1
ans =
  1×1 cell array
    {[1.8552e+03]}
SGfeature: Direct element command: area
ZZZZ =
  1×1 cell array
    {[1.8552e+03]}
SGfeature: Direct element command: area
SGfeature: Direct element command: area
ZZZZ =
  1×1 cell array
    {[1.8552e+03]}
SGfeature: Direct element command: area
SGfeature: Direct element command: area
ZZZZ =
    3.0505
SGfeature: Direct element command: area
nn =
     1
ans =
  1×3 cell array
    {1×1 cell}    {1×1 cell}    {[3.0505]}
```



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