

User Manual 4.0 Facets

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Definition

A facet is a surface defined by its area and a normal vector, no supposition made of its exact shape. From those information, it can compute its cross section seen from any incidental vector. A facet is visible only from one half-space : the cross section computed is not null only if the dot product with the incidental vector is negative.

It shall be used to describe a spacecraft geometry in cross section computations for force models.



Implementation

This class implements the CrossSectionProvider interface. Please refer to the [Javadoc](#) for a complete list of public methods.

Instantiation

The Facet class is built from its area and normal vector :

```
Vector3D normalvector = new Vector3D(1.0, 5.6, -3.2);  
CrossSectionProvider facet = new Facet(normalvector , 5.0);
```

Keep in mind that normal vector should represent the outside of your facet. For example, drag will only be computed when normal vector takes the wind.

Usage

The Facet class proposes basic methods to get its area and normal vector.

It also provides the method `getCrossSection` (CrossSectionProvider interface), that shall be used this way :

```
Vector3D incidentalBeam = new Vector3D(7.0, -2.0, 8.0);  
double crossSection = facet.getCrossSection(incidentalBeam);
```

The result is not null only if "incidentalBeam " dot product with "normalvector " is negative.

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