

# User Manual 3.4.1 Elliptic cylinder

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### Definition

The elliptic cylinders are defined in a 3D space by their origin, their local frame, their height and the two radii defining the elliptic basis :



### Implementation

The Elliptic Cylinder object in the SIRIUS library implements the [MAT\_GEO\_CylinderInterface cylinder interface]. Please refer to the [Javadoc](#) for a complete list of public methods.

### Instantiation

The object is built from three vectors (Vector3D) and three doubles :

```
Vector3D originCone = new Vector3D(1.0, 1.0, 1.0);
Vector3D direction = new Vector3D(2.0, 0.0, 0.0);
Vector3D inputUvector = new Vector3D(1.0, 1.0, 0.0);
double radiusA = 4.0;
double radiusB = 2.0;
double height = 5.0;
EllipticCylinder cylinder = new EllipticCylinder(originCone, direction,
inputUvector, radiusA, radiusB, height);
```

The local frame is built such as :

- W is the direction vector once normalized
- U is orthogonal to W and its direction is defined by the 'input U vector'
- V completes the frame

### Usage

Please refer to the [MAT\_GEO\_Home#HInteractions Interactions with other geometrical objects section] for methods inherited from the Shape interface.

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