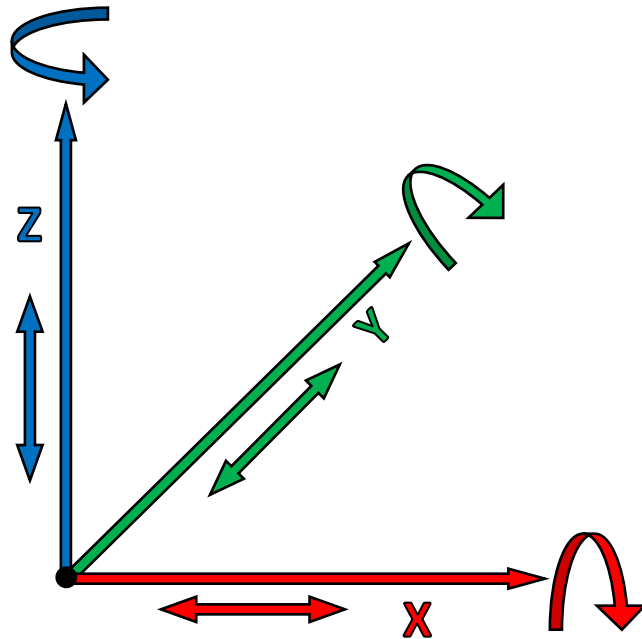# Calypso and the 6 degrees of Freedom

The 6 degrees of Freedom are:

3 - Rotations

Rotation about the **Z** axis
Rotation about the **Y** axis
Rotation about the **X** axis

3 - Translations

Translation along the **Z** axis
Translation along the **Y** axis
Translation along the **X** axis

Alignments in Calypso have:

Rotation in Space - Locks in 2 Rotations

Planar Rotation - Locks in 1 Rotation

X Origin - Locks in 1 Translation

Y Origin - Locks in 1 Translation

Z Origin - Locks in 1 Translation

Different feature types: Lock in what degrees of freedom? Can be used for what in an Alignment?

Feature	Lock in what degrees of freedom? Can be used for what in an Alignment?
Planes:	Locks up to 2 Rotations and 1 Translation Can be used for Rotation in Space, Planar Rotation, X, Y, or Z Origin
Cylinders and Cones:	Locks up to 2 Rotations and 2 Translation Can be used for Rotation in Space, Planar Rotation, X, Y, or Z Origin
3d Lines: (Axis)	Locks up to 2 Rotations and 2 Translation Can be used for Rotation in Space, Planar Rotation, X, Y, or Z Origin
2d Lines: (on Surface)	Locks 1 Rotation and 1 Translation Can be used for a Planar Rotation, X, Y, or Z Origin
Circles: (Point Reducible)	Locks up to 2 Translation Can be used for an X, Y, or Z Origin
Points:	Locks up 1 Translation (along normal vector) Can be used for an X, Y, or Z Origin

Please Note: Prior to Calypso 2020 Rotation in Space was called Spatial Rotation

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