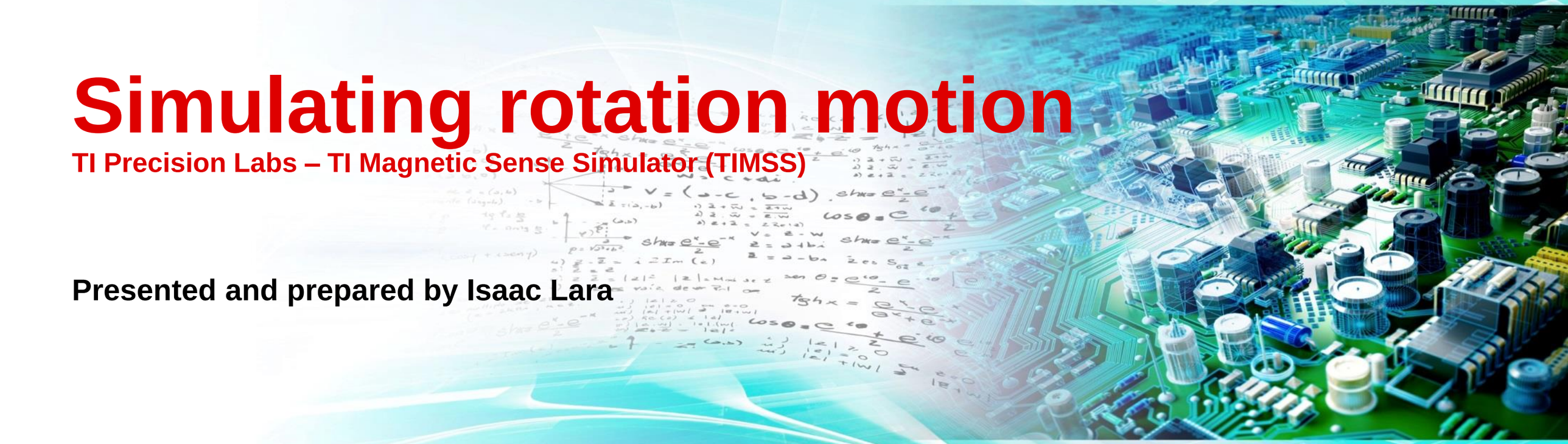
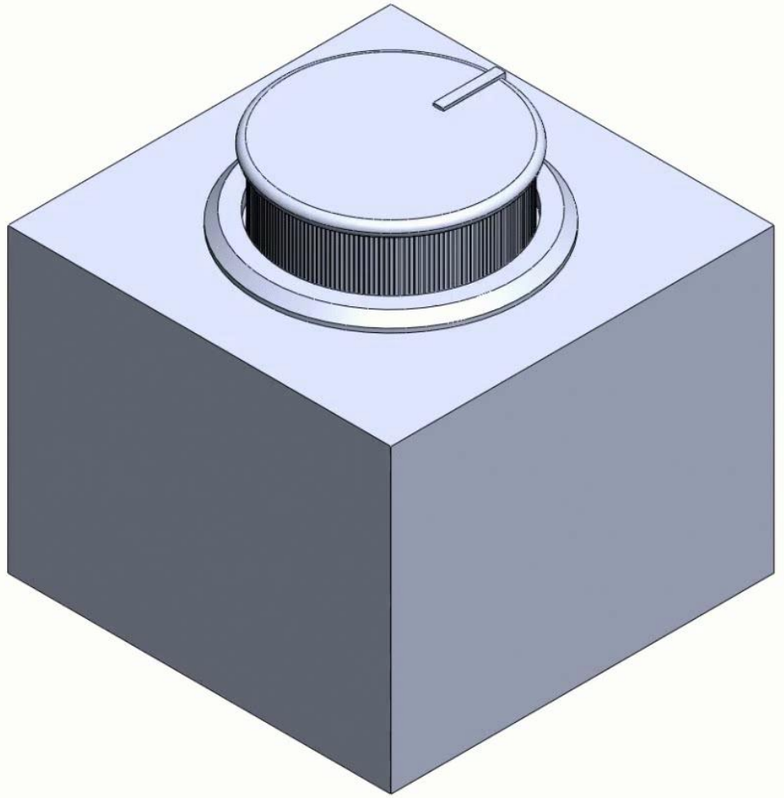
Simulating rotation motion

TI Precision Labs – TI Magnetic Sense Simulator (TIMSS)



Presented and prepared by Isaac Lara

Rotational motion

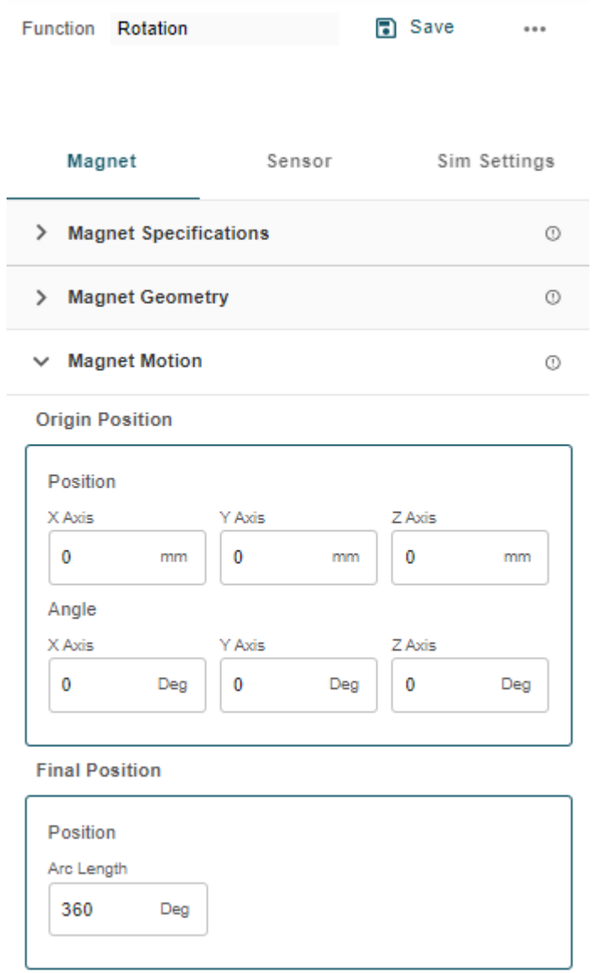


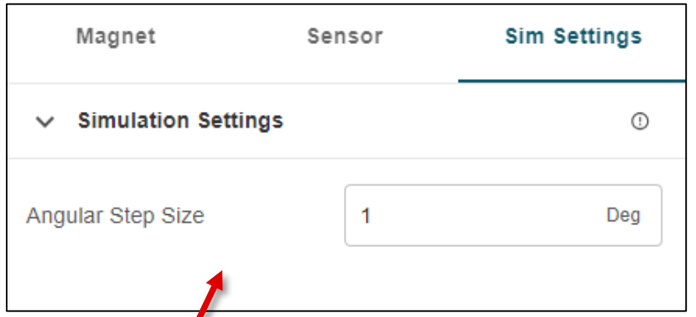
TIMSS simulation configuration

Initial location of the magnet center

Orientation of the magnet

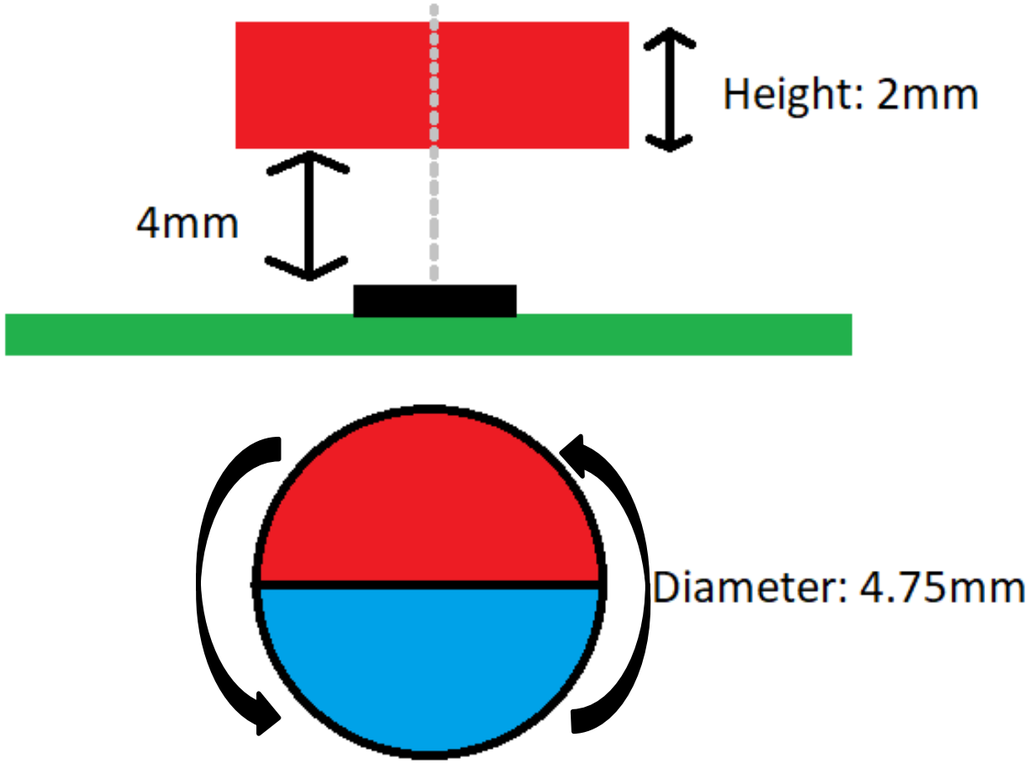
Degrees the magnet rotates about the Z-axis

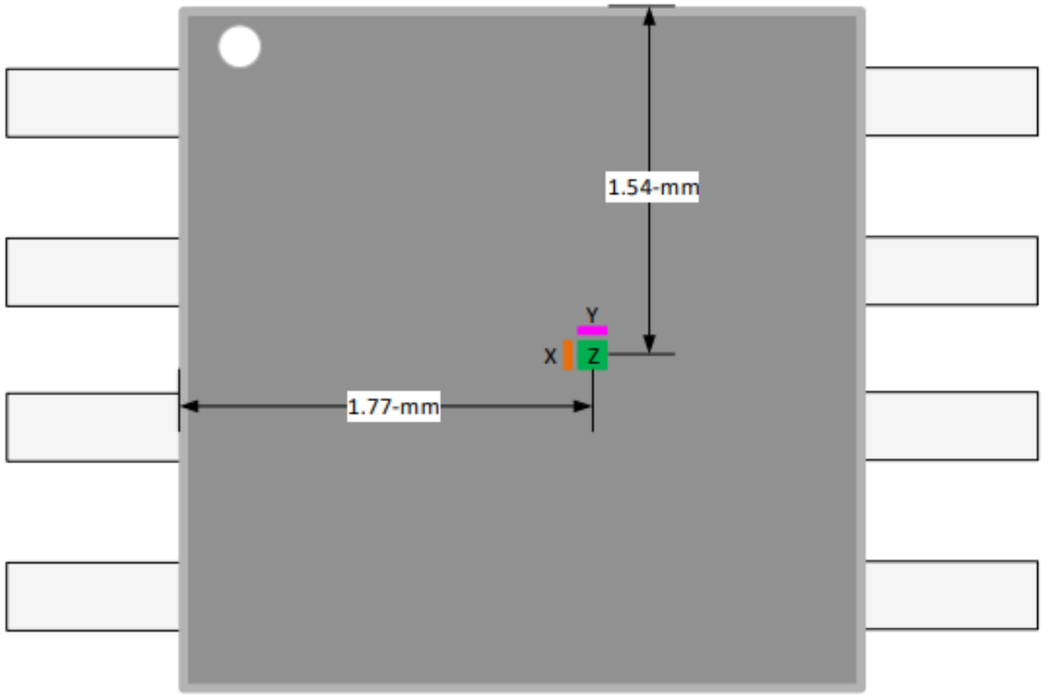




Simulation step size

Simulation configuration example



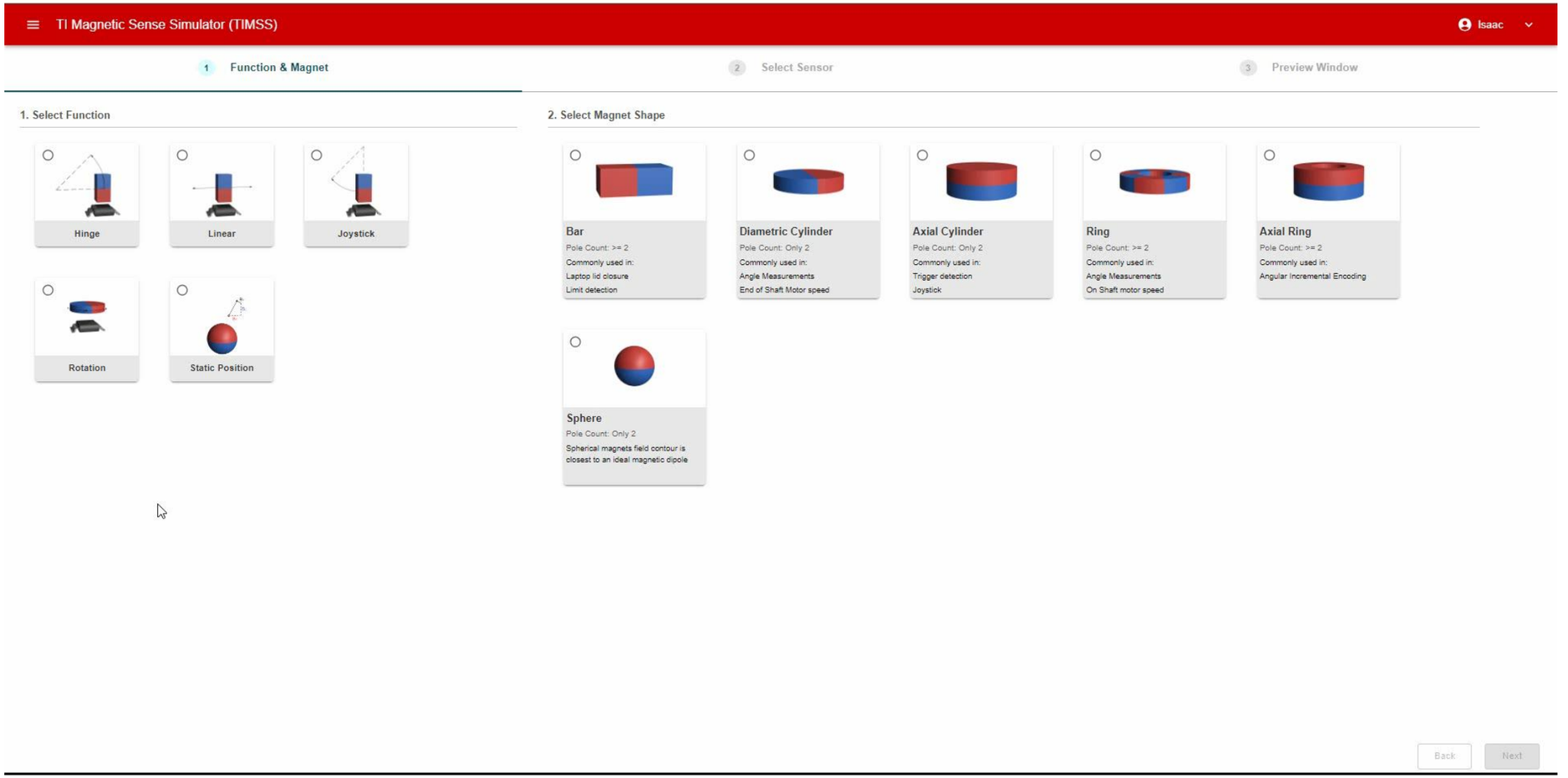


Other magnet details:
Magnet Shape- Diametric cylinder
Material- Neodymium
Magnet grade-N35
Degrees of rotation- 360°

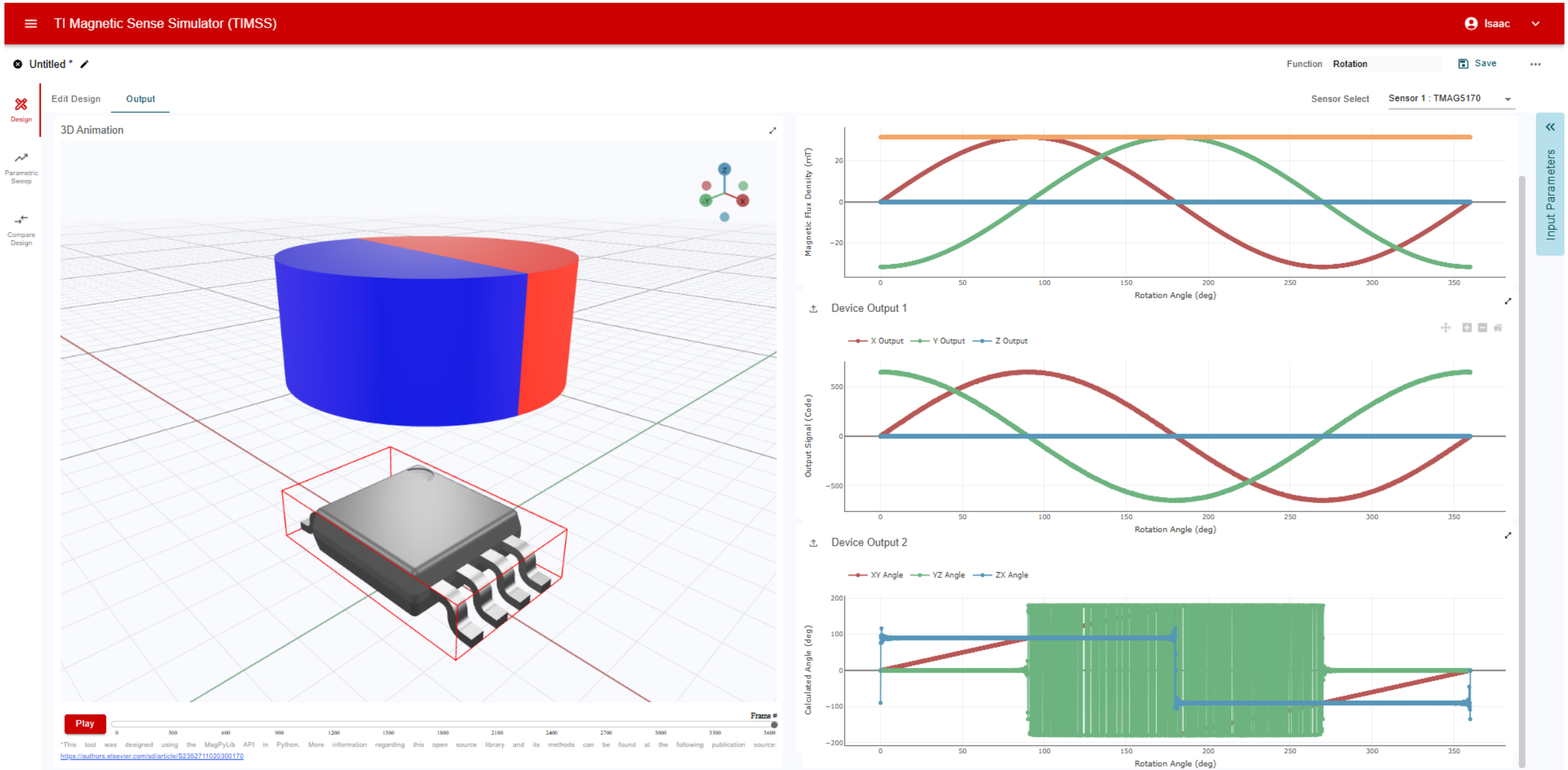
Sensor position accounting for Hall element:

- Airgap- 4mm
- X- -0.27
- Y- 0.04

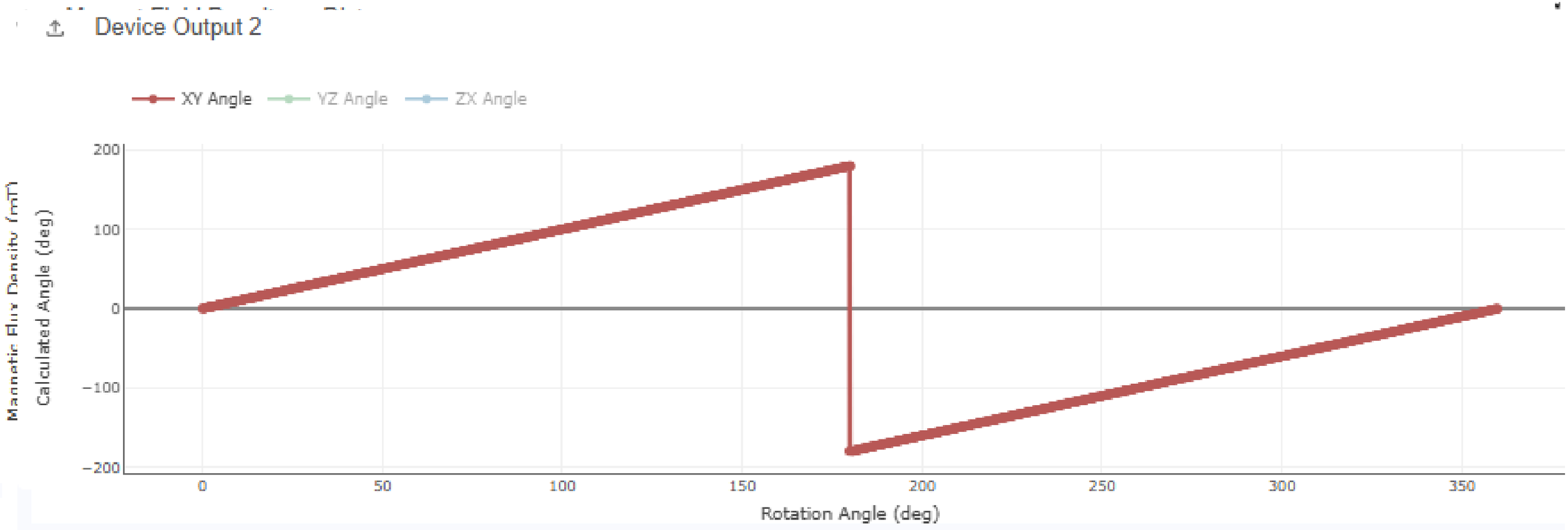
Simulation configuration walkthrough



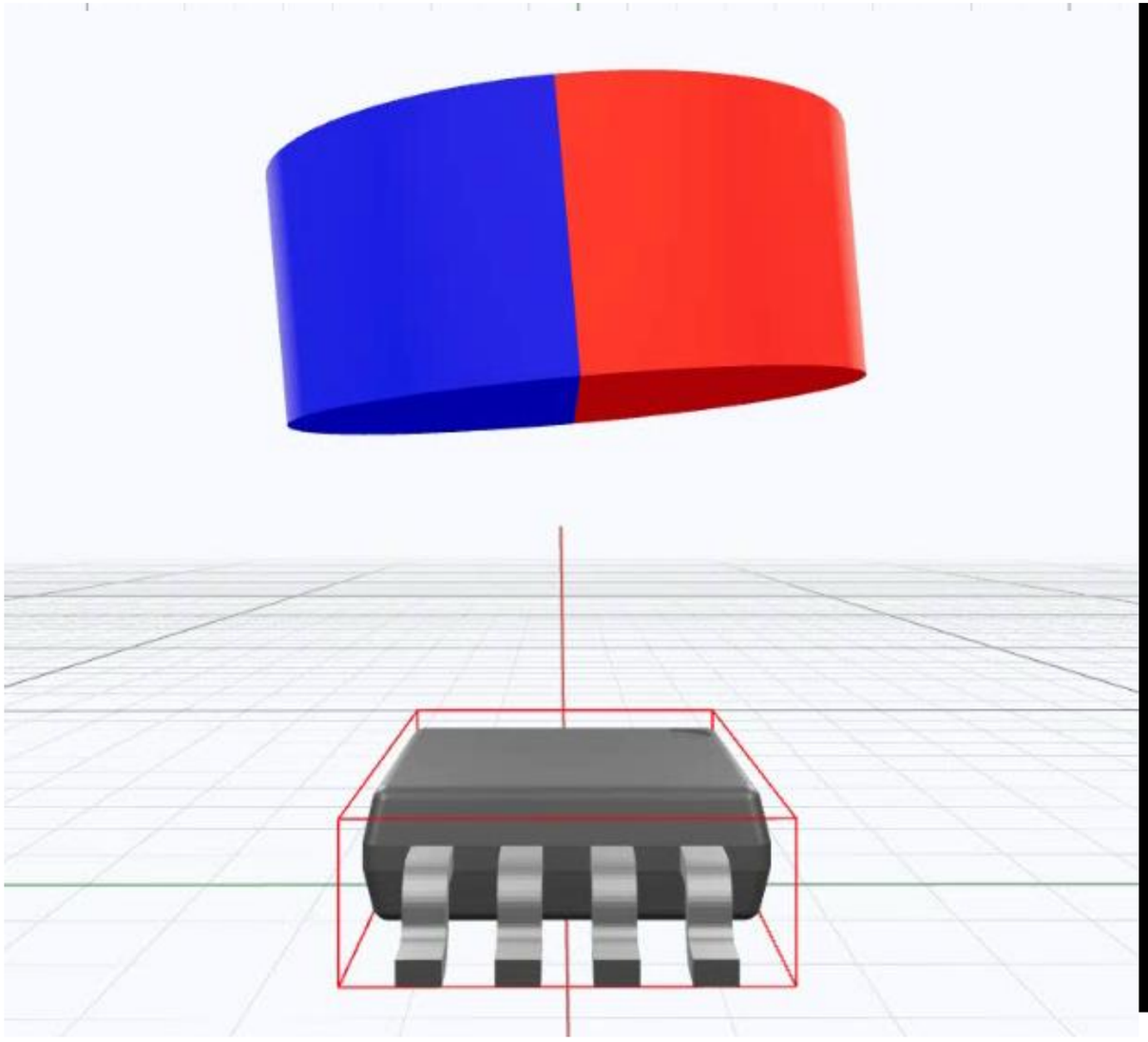
Rotation field behavior



Magnetic fields and angle



Simulating rotational errors



Origin Position

Position

X Axis	Y Axis	Z Axis
3 mm	0 mm	5 mm

Angle

X Axis	Y Axis	Z Axis
0 Deg	0 Deg	0 Deg

Learn more

- TI Magnetic Sense Simulator Product Folder
  https://www.ti.com/TIMSS
- TI Magnetic Sense Simulator User's Guide
  https://www.ti.com/lit/ug/slyu067/slyu067.pdf
- TI Magnetic Sense Simulator App Brief
  https://www.ti.com/lit/ab/slya083/slya083.pdf
- Angle Measurement With Multi-Axis Linear Hall-Effect Sensors
  https://www.ti.com/lit/an/sbaa463a/sbaa463a.pdf
- Position Sensing Demo Video Series
  https://www.ti.com/video/series/position-sensing-demos.html
- TI Precision Labs: Magnetic Sensor Training Videos
  https://www.ti.com/video/series/precision-labs/ti-precision-labs-magnetic-sensors.html
- Sensors E2E Forum
  https://e2e.ti.com/support/sensors-group/sensors/f/sensors-forum
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