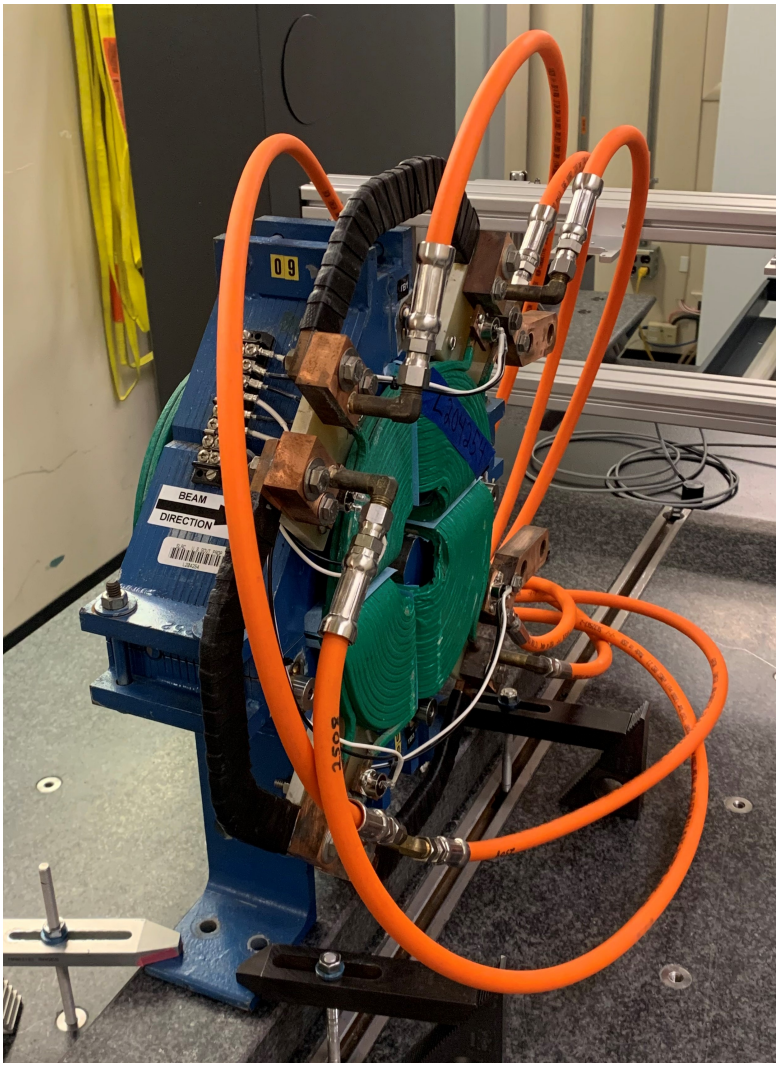
LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 38193-2



Inspector : K. Caban

Engineer : A. Ibrahimov

Drawing No. : LCL0370-10763 R00

Barcode # : L204253

Mfg. S/N : QA05

Coordinate System Setup

Spatial Alignment

The Spatial Alignment of the magnet is created through a composite best-fit of the pole tips. Each pole tip scanned 0.150 inch inboard from the upstream magnet face and the downstream magnet face. A composite best-fit of the upstream poles and the downstream poles is made with the nominal pole tip shape and location. An axis is created through the two best-fit centerpoints. This axis is the spatial alignment of the magnet and defines the Z axis and +Z points towards Terminal Bus End.

Planar Alignment

The Planar Alignment of the magnet is the created by averaging the rotations of the composite best-fits of the upstream pole tips and downstream pole tips. This direction defines the Y and X directions of the magnet.

Coordinate Origins

The origins of the magnet coordinate system are as follows. The XY origin lies on the axis of spatial alignment. The Z origin is the intersection of the mid-plane between the upstream and downstream magnet faces and the Z axis. +Z points towards Terminal Bus End.

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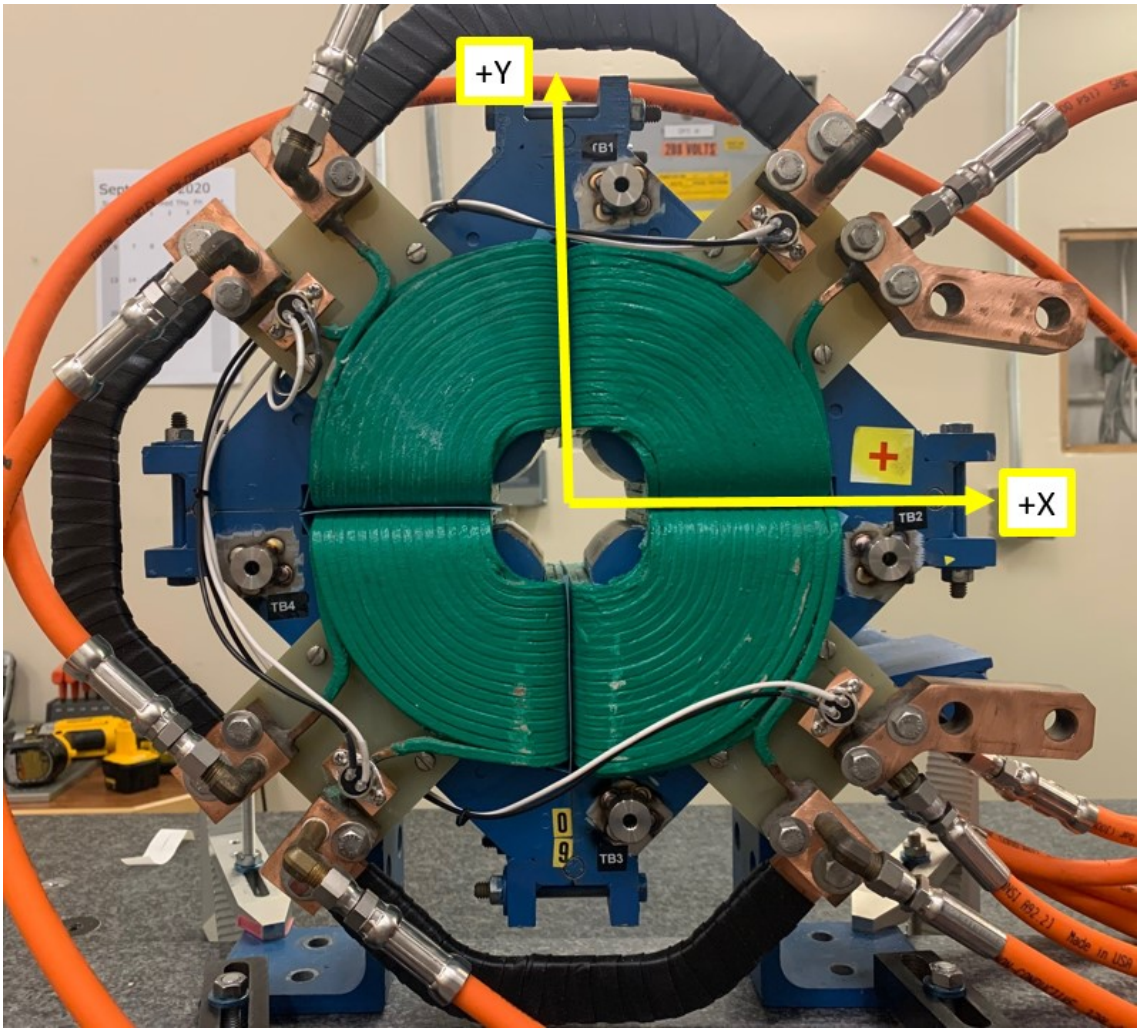
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	0.9862	5.5145	3.4372
TB 2	5.5666	-0.9710	3.4397
TB 3	1.0184	-5.4708	3.4485
TB 4	-5.4487	-0.9940	3.4480

Tooling Ball Locations are 1 inch above Tooling Ball Adapter Plane
Dimensions in Inch

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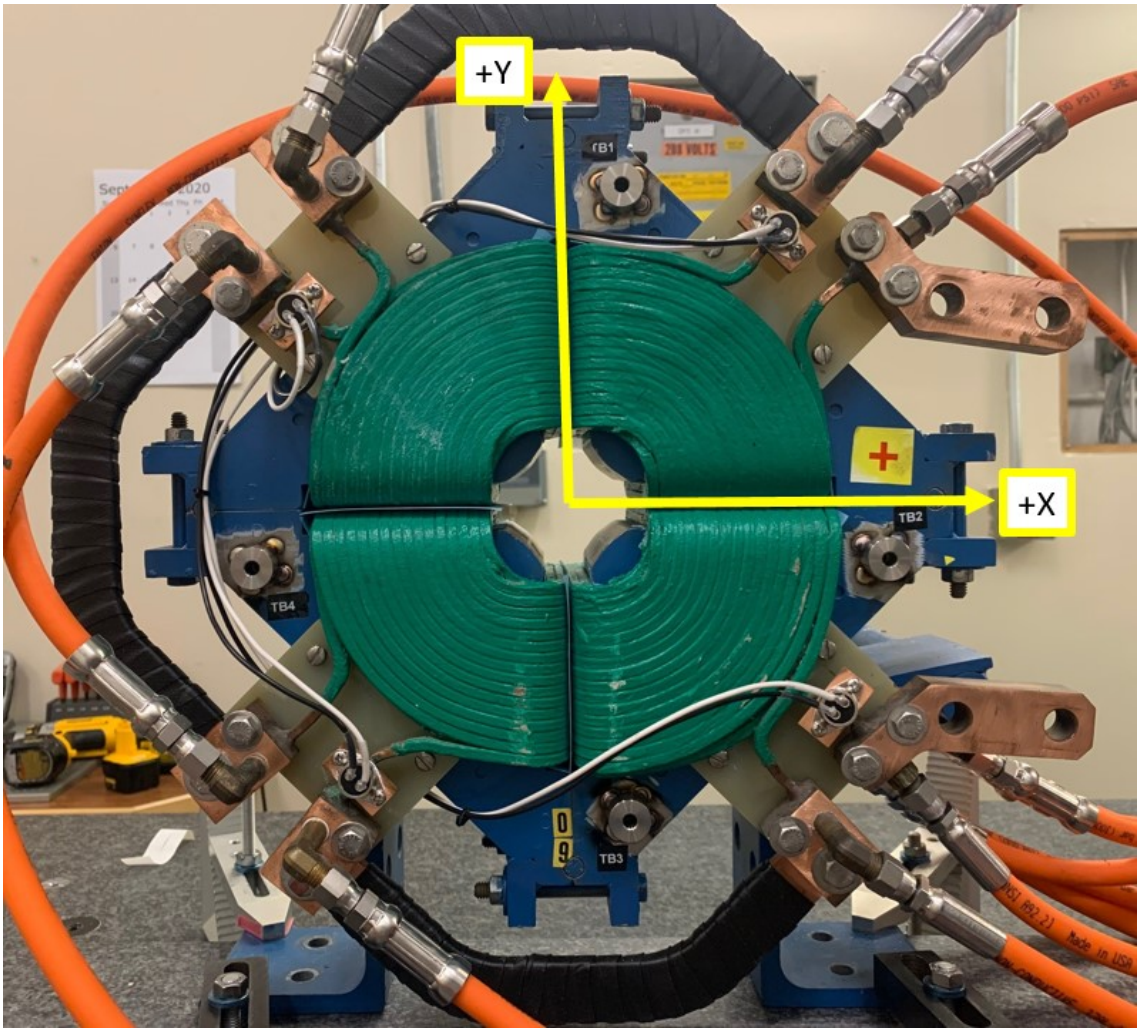
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	0.9896	5.5113	2.7497
TB 2	5.5635	-0.9696	2.7522
TB 3	1.0097	-5.4872	2.7613
TB 4	-5.4481	-1.0030	2.7606

Tooling Ball Locations are 5/16 inch above Tooling Ball Adapter Plane
Dimensions in Inch

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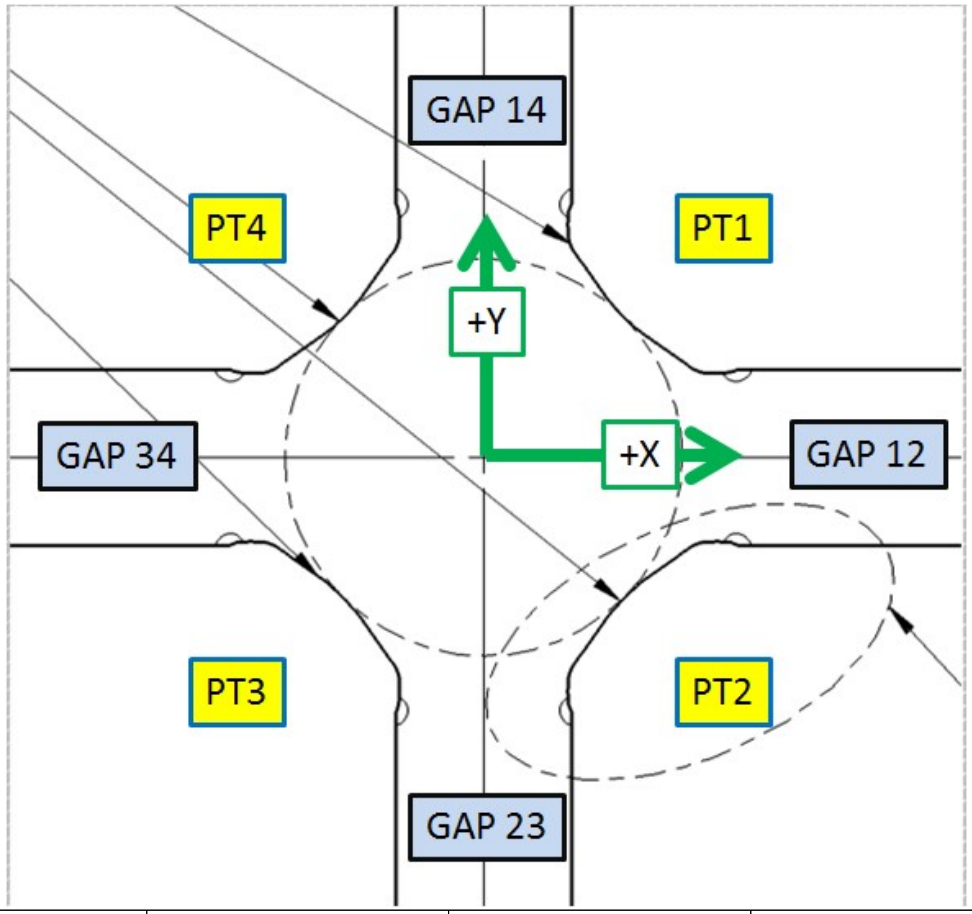
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0269	2.0318
PT Distance 2-4	2.026	2.0266	2.0316
Gap 1-2	0.8602	0.8584	0.8599
Gap 2-3	0.8602	0.8603	0.8663
Gap 3-4	0.8602	0.856	0.8537
Gap 1-4	0.8602	0.8534	0.8647

Dimensions in Inch

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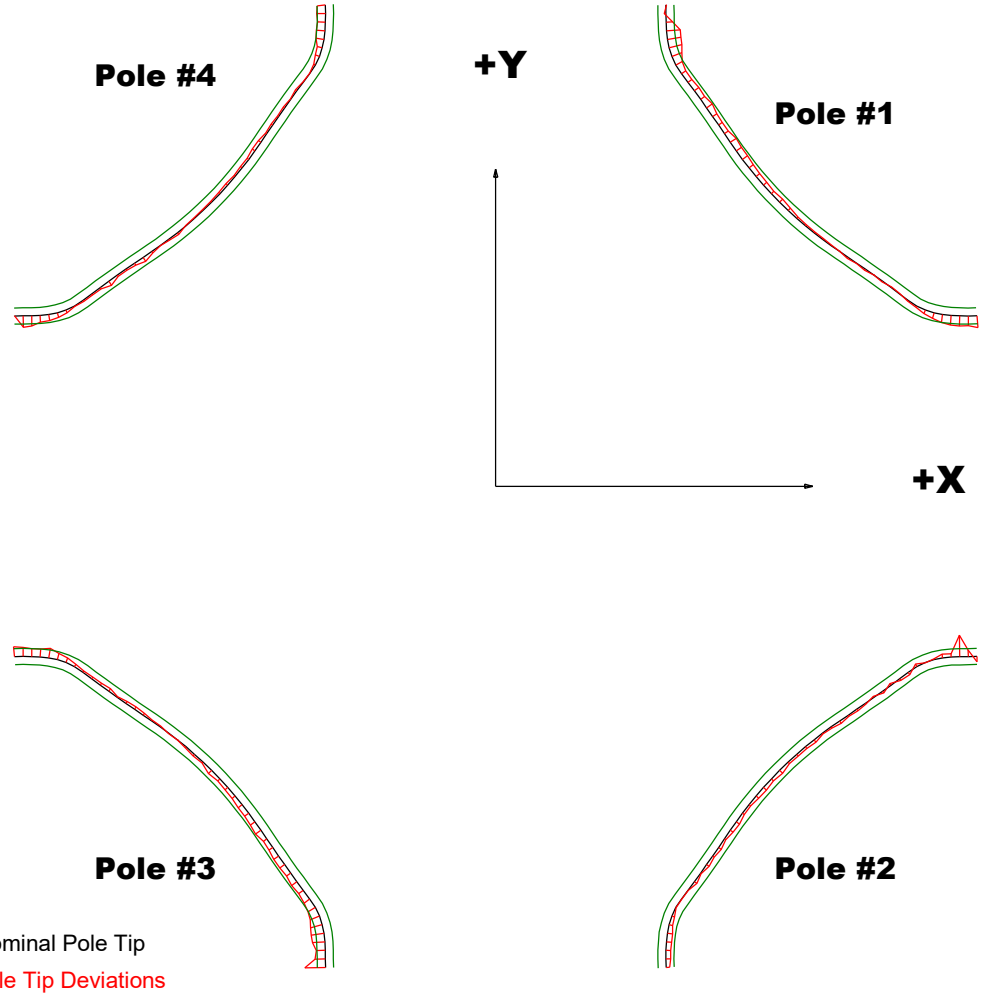
Composite Best-fit of Pole Tips, Downstream



Black = Nominal Pole Tip
Red = Pole Tip Deviations
Green = +/- .001 Tolerance

Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0017	-0.0007	-0.0026	-0.0011
Max. Dev.	0.0015	0.0027	0.0013	0.0014

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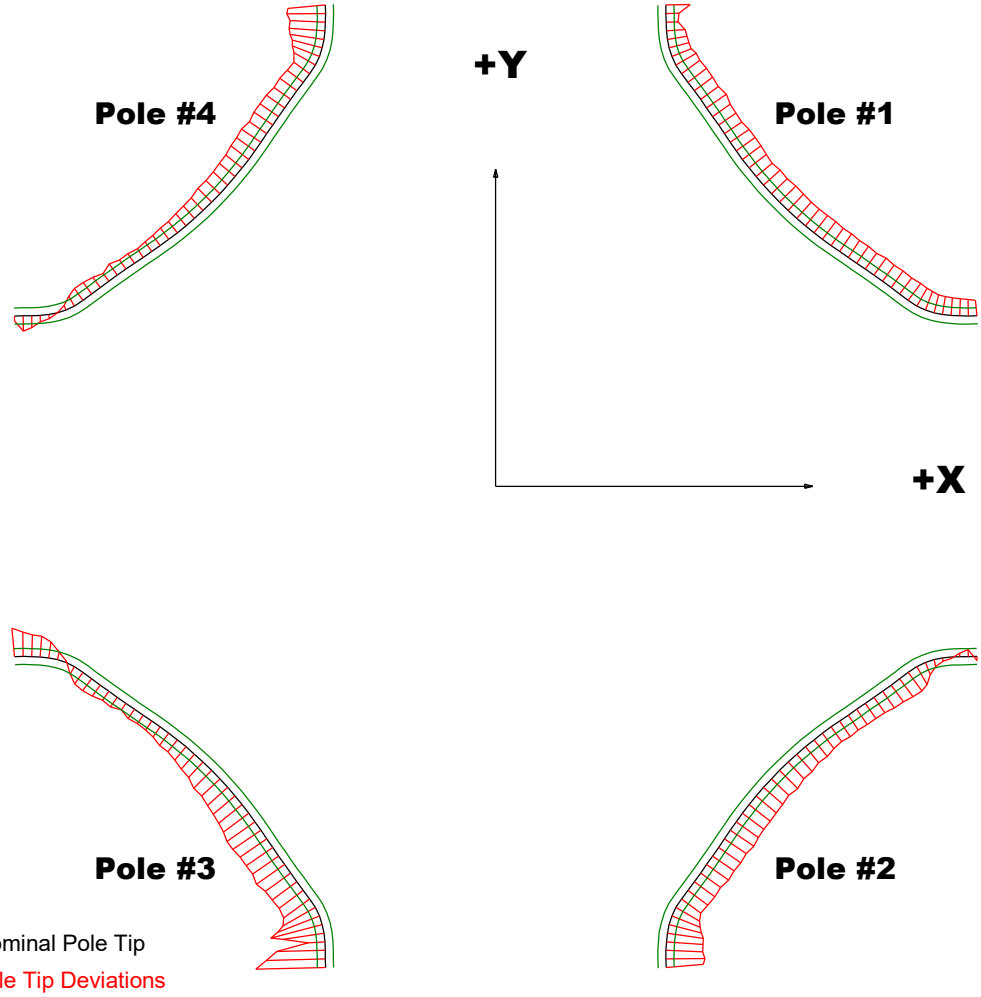
Composite Best-fit of Pole Tips, Upstream



Black = Nominal Pole Tip
Red = Pole Tip Deviations
Green = +/- .001 Tolerance

Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.003	-0.0049	-0.0087	-0.0048
Max. Dev.	-0.0015	0.0009	0.0035	0.0019

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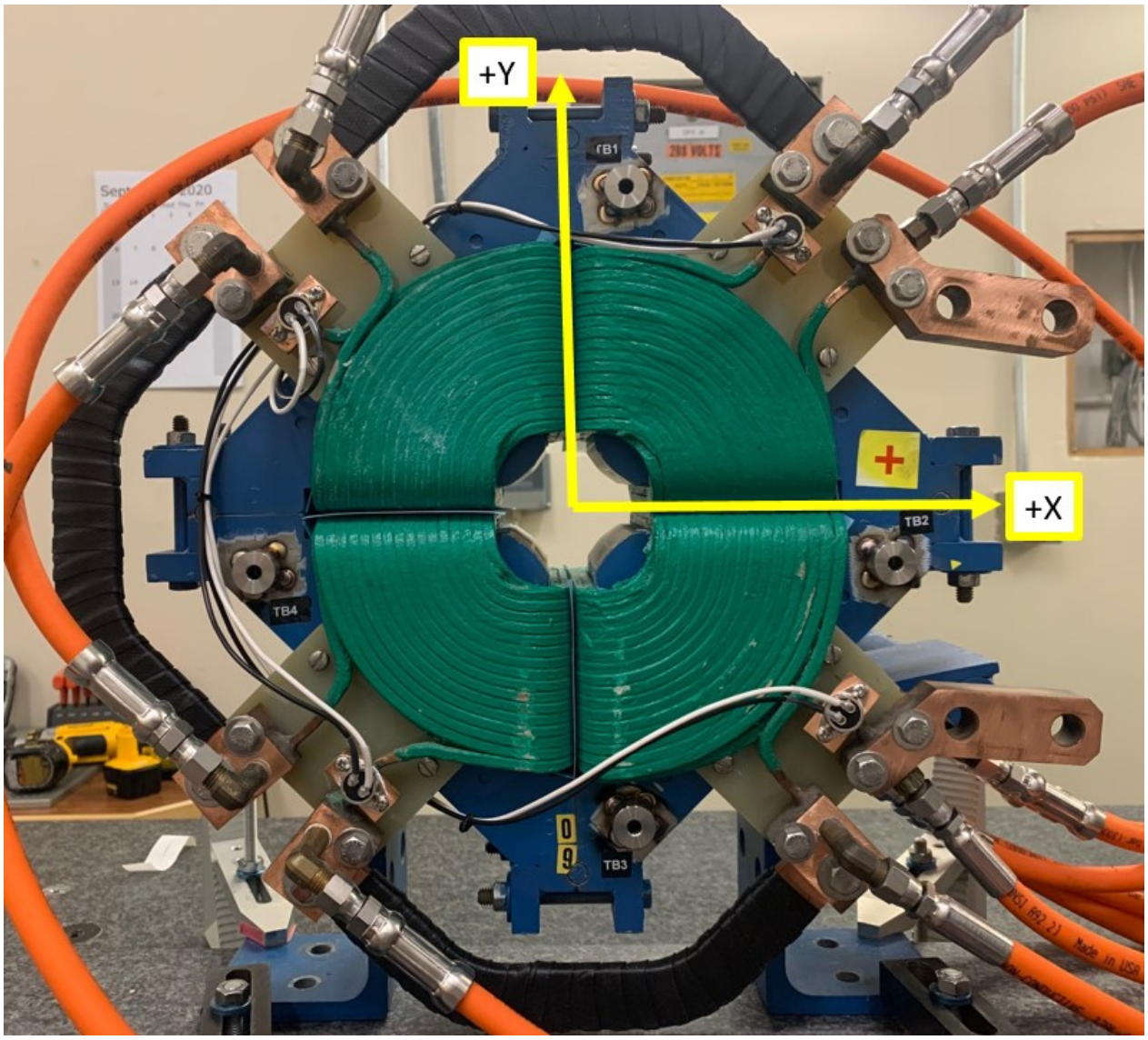
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	-0.00911
Angle in Milliradians :	-0.15896

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