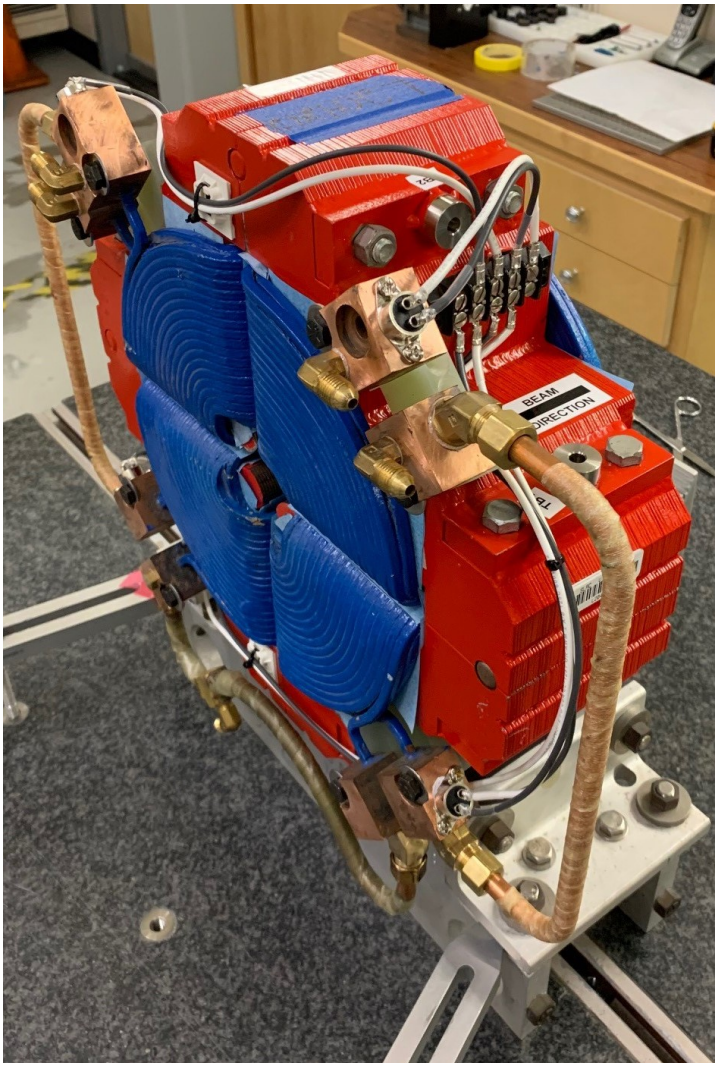
LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban
Engineer : E. Kraft
Drawing No. : SA-902-675-01
Barcode # :L204242
Mfg. S/N :

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 0.100 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.

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 Copper Tubing end.

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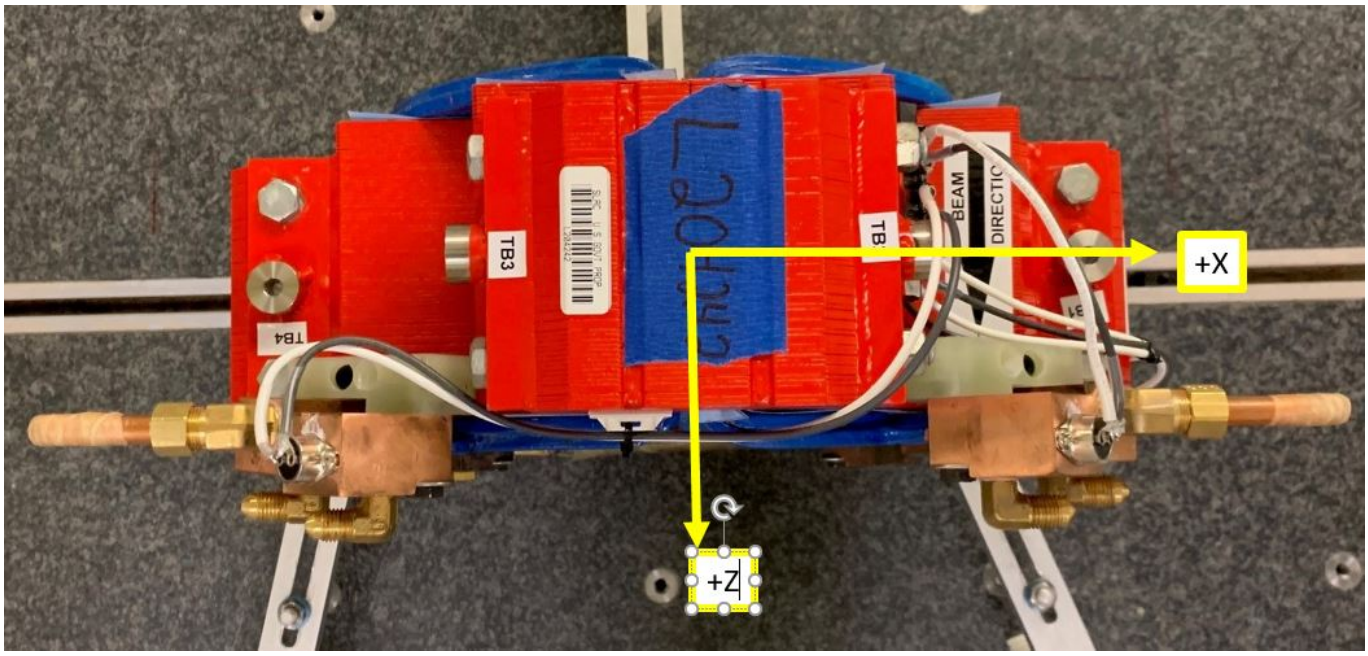
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	5.7532	3.9948	0.0577
TB 2	3.9917	5.8175	0.2647
TB 3	-3.9943	5.8137	0.2016
TB 4	-5.7940	3.9979	0.2693

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

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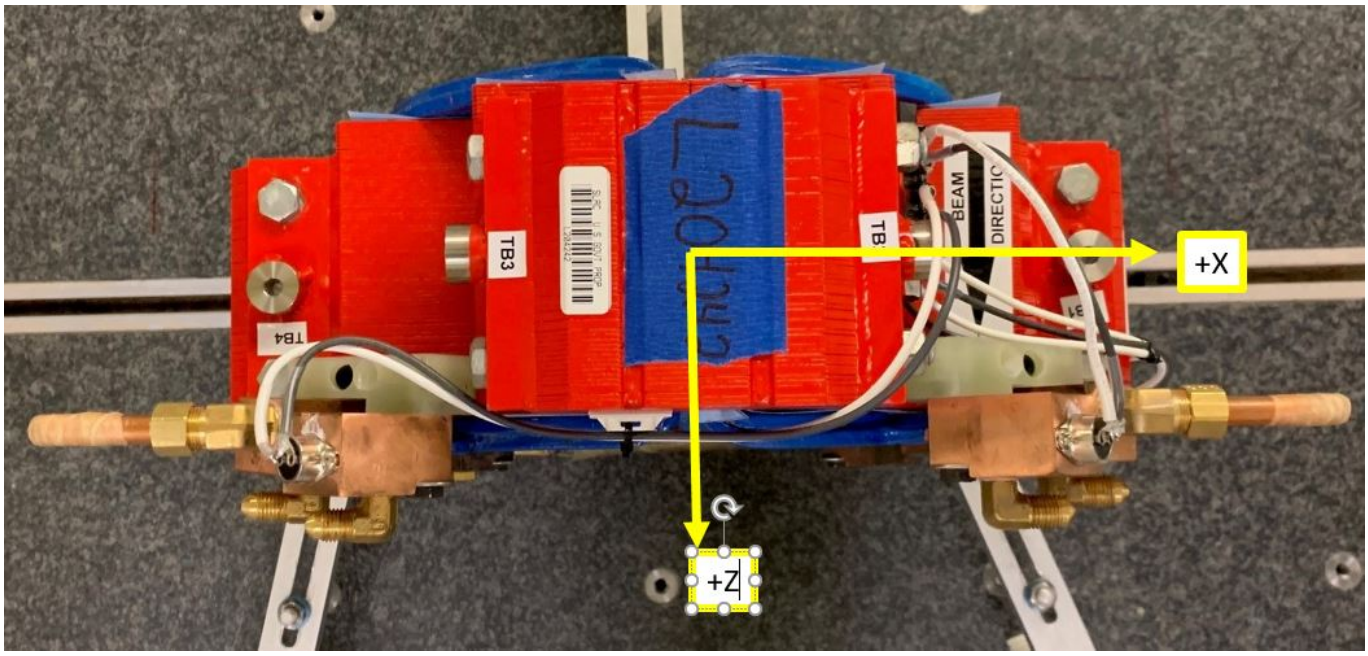
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	5.7534	3.3073	0.0580
TB 2	3.3042	5.8136	0.2634
TB 3	-3.3068	5.8106	0.1975
TB 4	-5.7862	3.3104	0.2684

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

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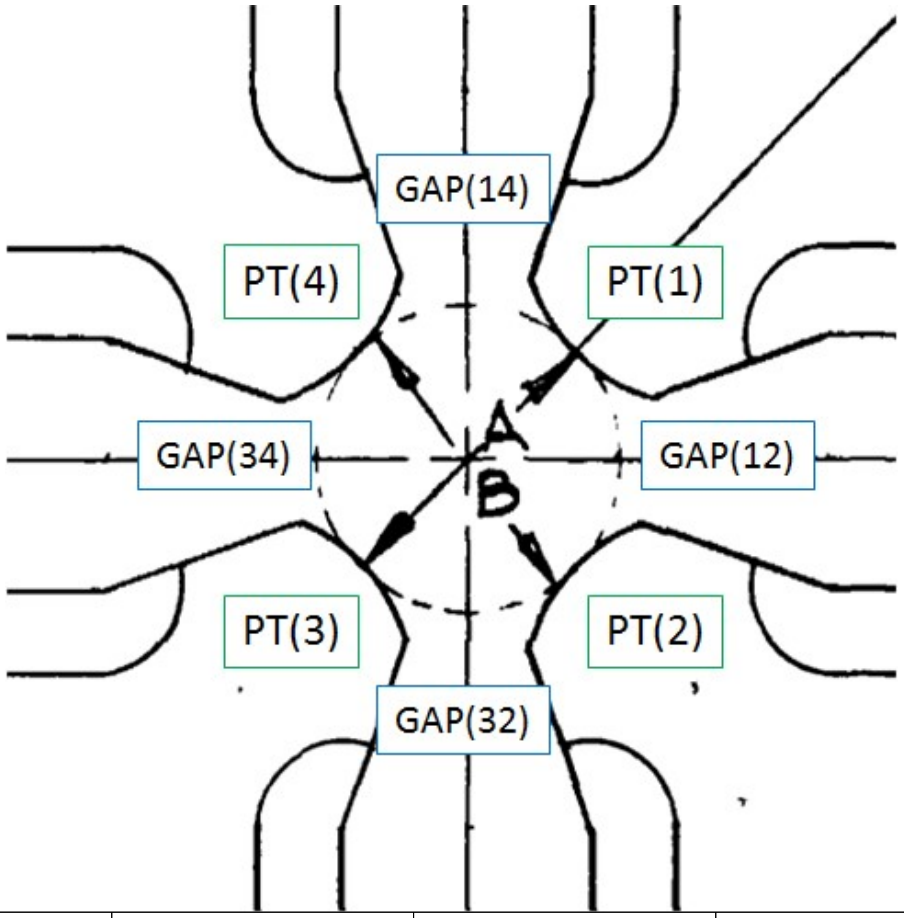
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.0845	1.0872
PT Distance 2-4(B)	1.085	1.0848	1.0885
Gap 1-2	0.4546	0.4628	0.4575
Gap 2-3	0.4546	0.4579	0.4654
Gap 3-4	0.4546	0.4547	0.4628
Gap 4-1	0.4546	0.4623	0.47

Dimensions in Inch

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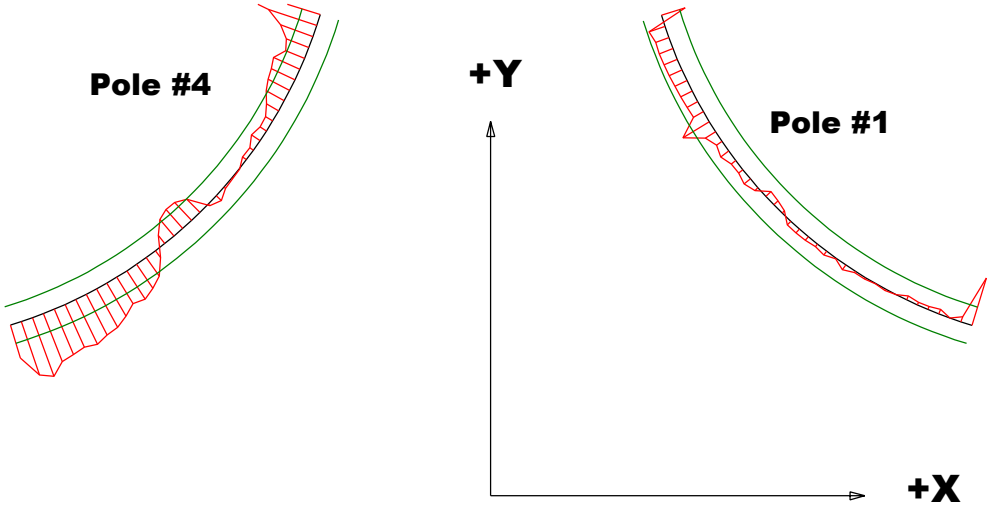
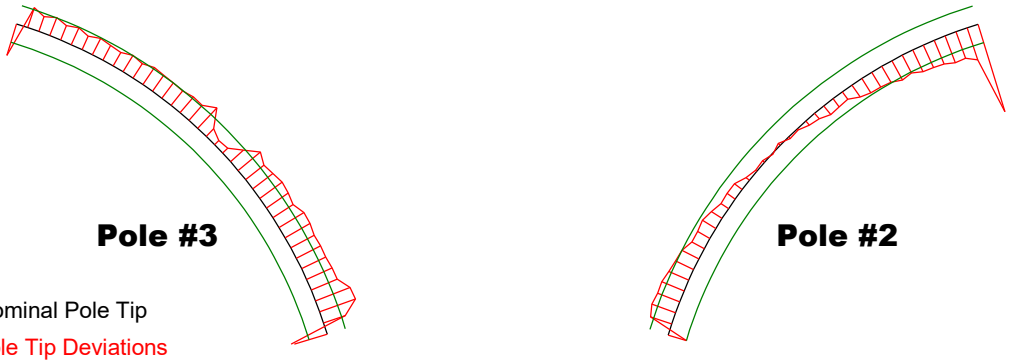
Composite Best-fit of Pole Tips, Downstream





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.	-0.0026	-0.0048	-0.0022	-0.0061
Max. Dev.	0.0016	0.0013	0.002	0.0033

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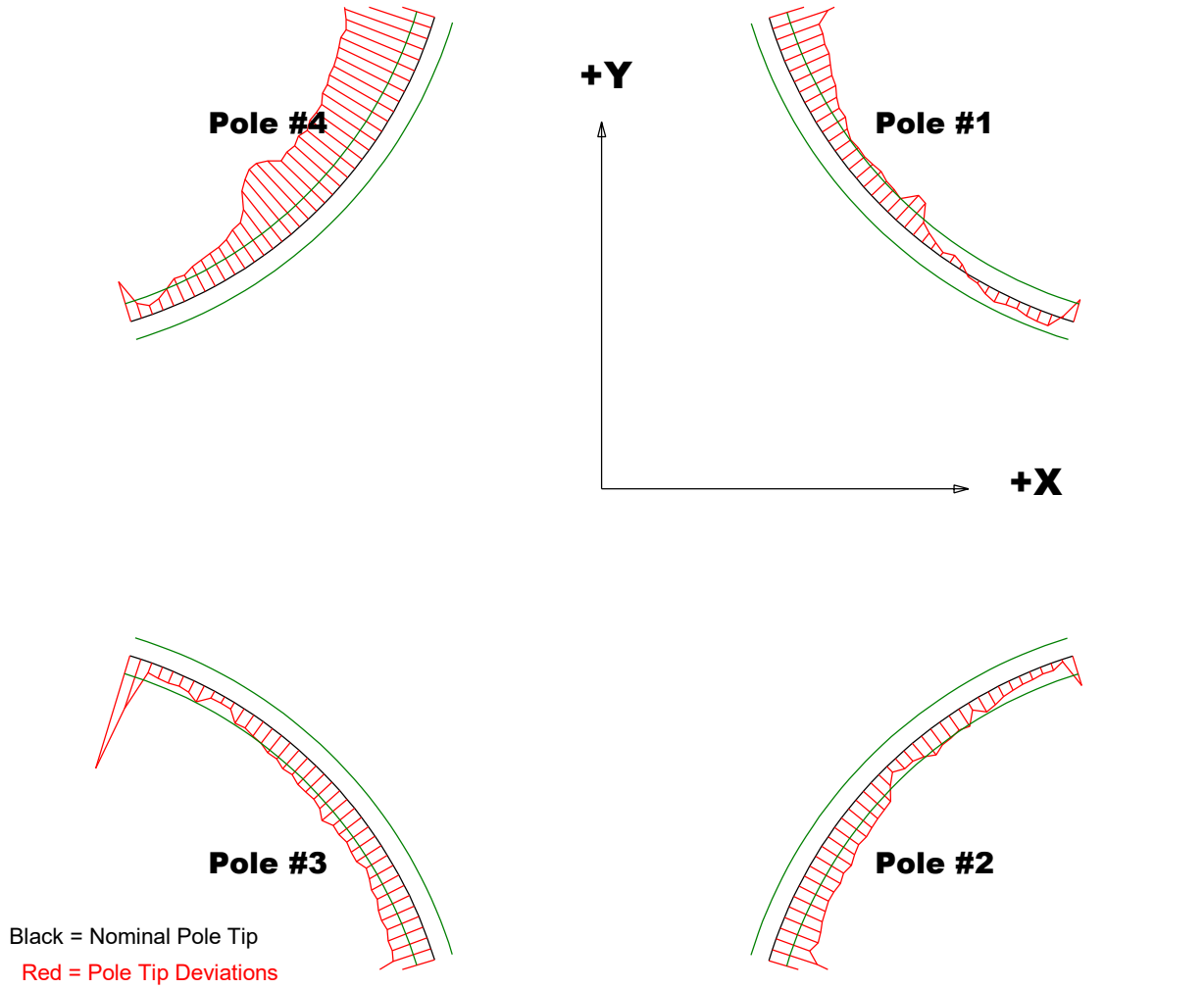
Mfg. S/N :

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.	-0.0071	-0.0062	-0.0063	-0.0078
Max. Dev.	0.0006	-0.0001	-0.0004	-0.0005

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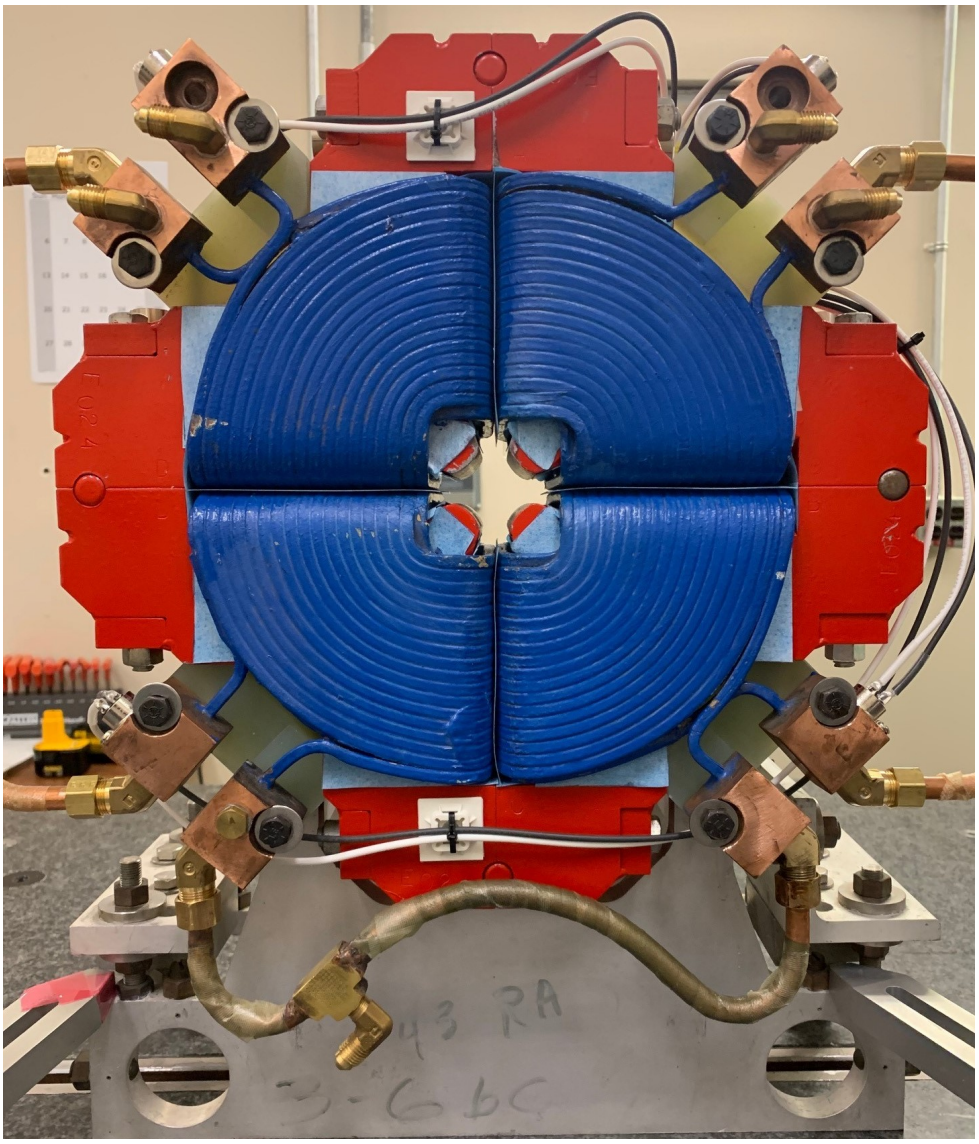
Angle of the Composite Pole Tip Best-Fit



Angle in Decimal Degrees ° :-0.01391

Angle in Milliradians :-0.24285

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