

Jefferson Lab Alignment Group

Data Transmittal

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DETAILS:

data : inspection\hallb\torus12g\150826A

The Torus magnet was surveyed on August 25th and 26th. The results of the survey are shown below.

Hub data:

The coordinates below show the located upstream and downstream hub and the ideal design zero position for the coils based on drawing B00000-04-01-1101. The local system has +z downstream, +x to the beam left and +y up vertically. The found angles are in degrees and are in the upstream to downstream direction. Additionally, the coordinates in the overall CEBAF coordinate system are shown. The angles for the found hub are also shown relative to the local system.

Hub Line Data								
Local System (mm)			Cebaf Coordinate System					
	x[mm]	y[mm]	z[mm]	x[M] y[M] z			z[M]	
Design zero	0.00	0.00	0.00	Design zero	-80.60000	103.35526	-401.18852	
Upstream	-0.88	-4.07	457.83	Upstream	-80.59912	103.35119	-401.64635	
downstream	-0.52	0.66	2508.07	downstream	-80.59948	103.35592	-403.69659	

Found Angles	Yaw	Pitch	
	0.0101	0.1322	

Angle Data:

Angles between the surveyed hub and upstream / downstream tooling balls on individual cryostats:

Using the lines formed from the found tooling balls to the found hub line, the adjacent angles were calculated for each cryostat in the upstream and downstream positions. The ideal angles should be 60°.

Upstream		DownStream	
	degrees	degrees	
A to B	60.0206	A to B	60.0376
B to C	59.9805	B to C	60.0024
C to D	60.0109	C to D	59.9774
D to E	59.9697	D to E	59.9779
E to F	60.0121	E to F	59.9951
F to A	60.0061	F to A	60.0096
Sum	359.9999	Sum	360.0000

Coil case outer fiducial data :

A relative coordinate system based on holding the hub line (upstream and downstream points as noted above) and coil D for rotation was established. A 60° and 120° rotation about the hub line was used to determine relative systems for coils E and F. The coils D/A, B/E and F/C were matched to determine the relative coordinates for opposite pairs.

The found positions are shown below. The yaw angle describes the 'twist' for each cryostat relative to the found hub. The pitch angles are shown also, from upstream to downstream. The ideal pitch between fiducial points is 35.9974°. The dPitch is the difference for each cryostat.

Cryostat Outer Edge Fiducial Data							
Relative Coordinates [mm]					Resulting Angles		
				ideal pitch	35.9974		
					ideal yaw	0.0000	
	х	у	Z		dYaw	pitch	dPitch
A_us	0.40	3206.13	-958.15				
A_ds	0.58	4212.61	426.54		0.0073	36.0121	0.0147
D_us	0.28	-3208.86	-955.31				
D_ds	0.70	-4214.02	430.22		0.0176	-35.9598	-0.0376
B_US	-0.75	3206.65	-957.66				
B_DS	-2.18	4213.07	427.02		-0.0591	36.0105	0.0131
E_us	-1.43	-3207.21	-957.31				
E_ds	-0.93	-4213.35	427.41		0.0205	-36.0023	0.0049
C_us	0.33	3208.08	-955.93				
C_ds	-2.36	4213.68	429.04		-0.1114	35.9826	-0.0148
F_us	-0.74	-3206.06	-958.12				
F_ds	-1.28	-4212.70	426.35		-0.0222	-36.0207	0.0233