Jefferson Lab Alignment Group

Data Transmittal

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DETAILS: data: step2b\hallc\qweak\100611a

The Quartz Bar Detectors in Hall C were surveyed on June 11, 2010. The table shown on the following page contains the as-found coordinates in both the Qtor magnet system and the local Quartz Bar system as defined in Dave Mack's alignment system (see sketch). Additionally the movements in the local system are shown.

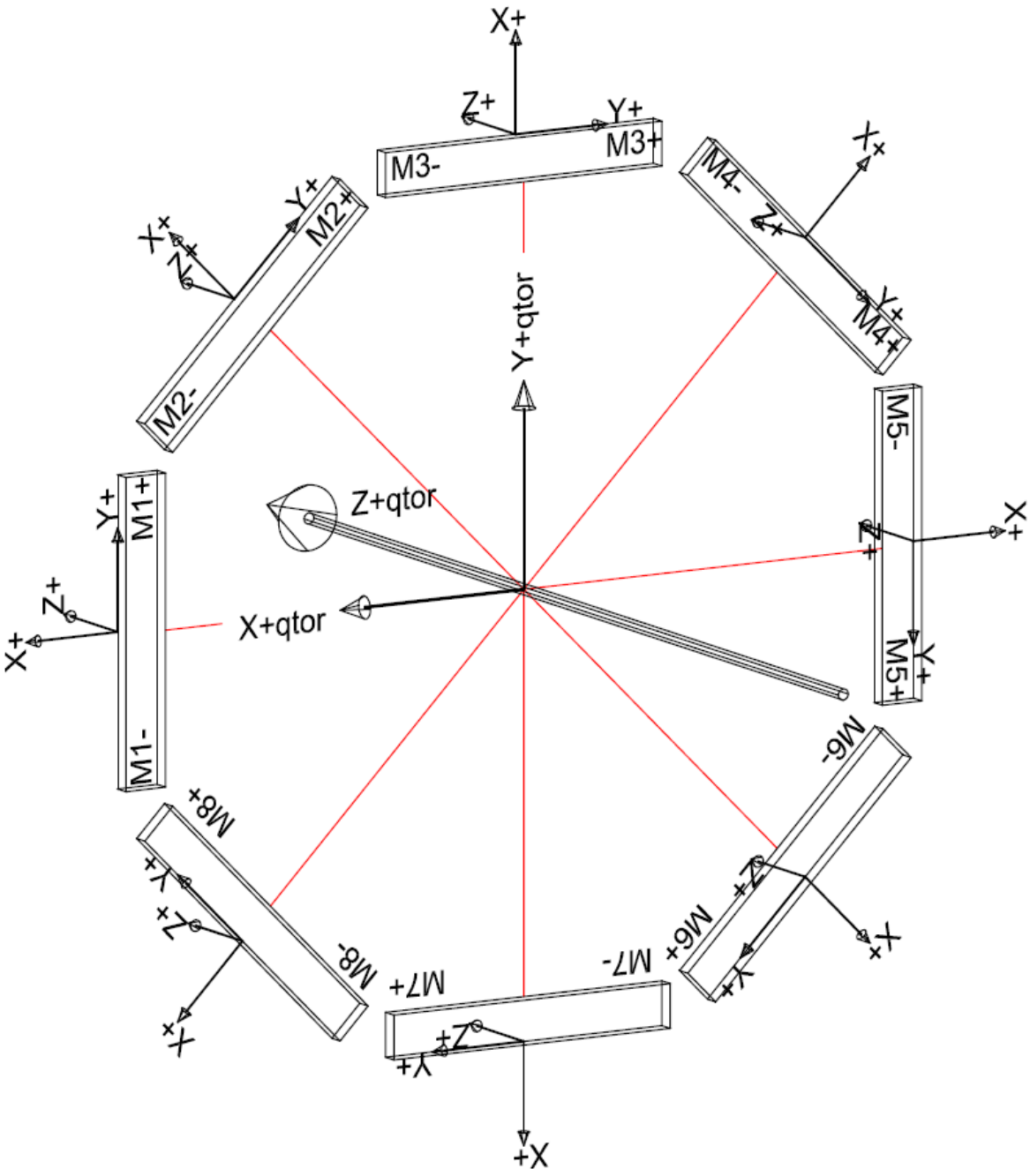
The first group of coordinates are the as-found locations of the bars in the Qtor coordinate system, with the origin at the center of the Qtor magnet. The axis are: Z+ following the beam, X+ transverse in the horizontal direction and Y+ vertically up. Units are meters.

The second group of coordinates describes the as-found locations in the local system for each individual detector. Z+ is in the beam direction with origin at the downstream edge of the bar (570.625 cm downstream of Qtor center, 341 cm radially from beam centerline), X is radially outward from the beamline, and Y follows the downstream top edge of the bar at the appropriate angle.

The column labeled "Ri Component", is the amount that the bars need to be radial displaced in the local quartz X direction. The Ri amount is based upon the amount of Z movement from the ideal Z location and based upon the formula Ri=tan(22.24°)*(Zi-570.625cm) + 341cm. The formula corrects the radial (local X coordinate) position of the bars to catch the beam envelope, as described by D. Mack. Units are centimeters.

The final group of coordinates labeled "Movements", are the calculated amounts the detectors need to move in the local system. The X radial column is the amount the detectors would have to move out after applying the correction amount in the Ri column. A + value indicates the detector needs to move away from the beam centerline. The Y column indicates how much the detector needs to move along the local Y axis. A +Y value would mean the detector moves in positively along the Y axis. A + Z value indicates the detector needs to move downstream from the ideal local value (570.625cm from Qtor center). Units are centimeters.

	Qtor Coord System					Local Quartz Bar Coords						Movements (cm)		
Detector Side	X (M)	Y (M)	Z (M)	phi ang (deg)		Local X (cm)	Local Y (cm)	Local Z (cm)		Ri component		X Radial (cm)	Y (cm)	Z (cm)
MD1+	3.4379	1.2568	5.7743	0		343.79	125.68	577.43		343.782		-0.008	0.052	6.804
MD1-	3.4357	-1.2578	5.7715			343.57	-125.78	577.15		343.666		0.096	0.052	6.521
MD2+	1.5418	3.3227	5.7788	45		343.97	125.93	577.88		343.965		-0.005	-0.203	7.252
MD2-	3.3174	1.5422	5.7678			343.62	-125.52	576.78		343.518		-0.103	-0.206	6.158
MD3+	-1.2580	3.4371	5.7726	90		343.71	125.80	577.26		343.712		-0.002	-0.071	6.631
MD3-	1.2566	3.4429	5.7803			344.29	-125.66	578.03		344.029		-0.265	-0.073	7.408
MD4+	-3.3266	1.5417	5.7836	135		344.24	126.21	578.36		344.162		-0.075	-0.482	7.732
MD4-	-1.5455	3.3168	5.7774			343.82	-125.25	577.74		343.910		0.093	-0.483	7.118
MD5+	-3.4390	-1.2576	5.7808	180		343.90	125.76	578.08		344.048		0.143	-0.031	7.453
MD5-	-3.4418	1.2570	5.7820			344.18	-125.70	578.20		344.099		-0.081	-0.031	7.578
MD6+	-1.5343	-3.3312	5.7848	225		344.05	127.06	578.48		344.210		0.163	-1.328	7.851
MD6-	-3.3144	-1.5551	5.7868			344.33	-124.40	578.68		344.293		-0.033	-1.328	8.054
MD7+	1.2596	-3.4427	5.7875	270		344.27	125.96	578.75		344.322		0.050	-0.234	8.124
MD7-	-1.2550	-3.4407	5.7827			344.07	-125.50	578.27		344.125		0.055	-0.235	7.641
MD8+	3.3099	-1.5508	5.7758	315		343.70	124.39	577.58		343.844		0.144	1.340	6.956
MD8-	1.5344	-3.3314	5.7779			344.06	-127.07	577.79		343.931		-0.133	1.339	7.169


X+
Z+
Y+
M3-
M3+
M4-
M4+
M2+
M2-
Y+qtor
Z+qtor
X+qtor
M5-
M5+
M1+
M1-
M8+
M8-
M7+
M7-
M6-
M6+