Charybdis map update

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On May 5 Brad Plaster and I measured the magnetic field of Charybdis along the center line for the three currents (nominally, 170.5 A, 226.5 A, and 237.6 A) we used for the $\pm 40^\circ$ technique. Figure 1 shows the vertical component of the field as a function of position. Table 1 compares the field integrals to predictions made from a linear fit to previous TOSCA results (see my previous report). The linear function was

$$\int Bdl = (0.0058 \pm 0.0073) + (0.00401 \pm 0.00003)I, \qquad (1)$$

where I is the current in amps and $\int Bdl$ is in Tesla-meters. Table 1 also lists the precession angles for each Q^2 setting for the central neutron momentum. Note the 0.6° degree difference between the precession angles for the two polarities of the 170.5 A case.

Q^2 $(Gev/c)^2$	Nominal I (A)	$\int Bdl$ (Tm)	$\chi(^\circ)$	Predicted $\int Bdl$ (Tm)
0.447	-170.5	-0.69336	40.24	
0.447	+170.5	0.68308	-39.64	0.6881±0.0089
1.169	+226.5	0.91108	-39.93	0.913±0.010
1.474	+237.6	0.95563	-39.89	0.959±0.010

Table 1: Comparison of empirical field integrals to the prediction from the linear function (equation 1) using measured values of the current (170.15 A, 226.15 A, and 237.2 A). The precession angle χ is also computed for the value of β_n corresponding to the central Q^2 value quoted in the first column.

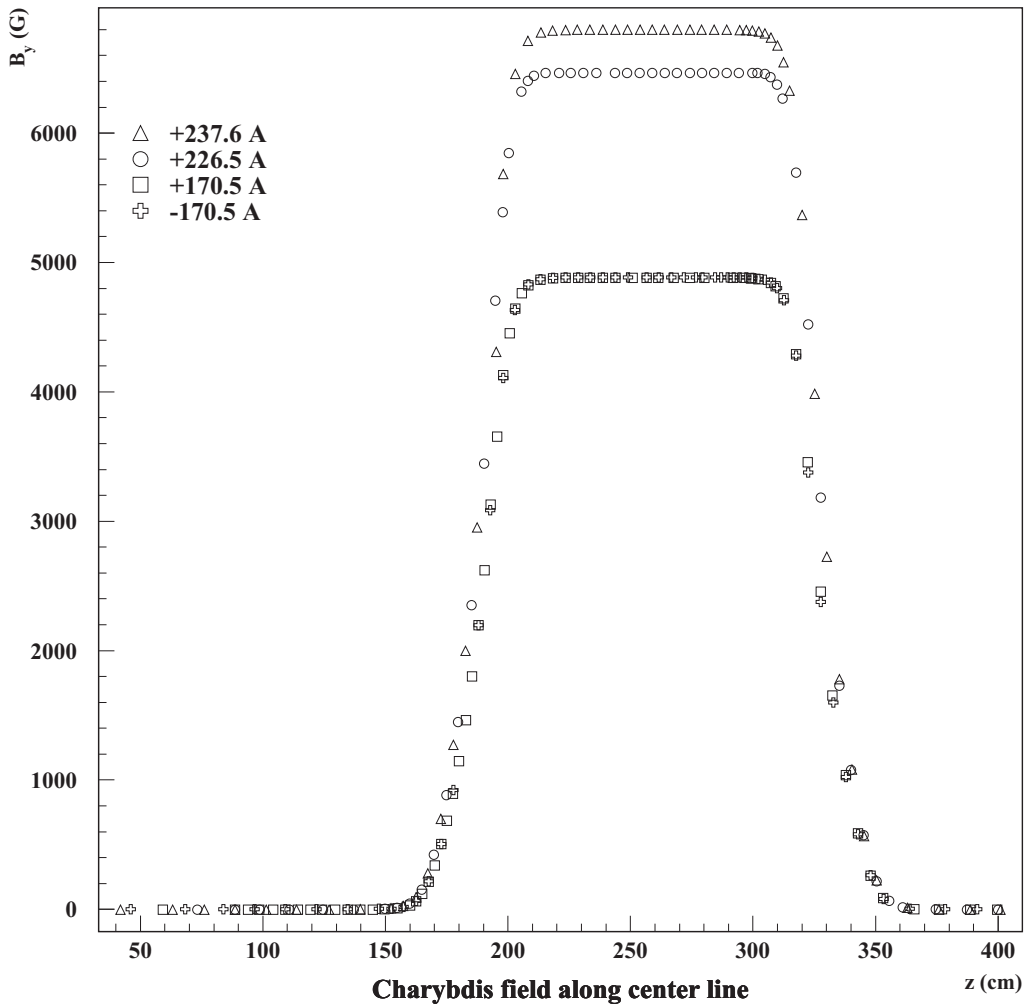

Figure 1: Magnitude of the vertical component of the magnetic field produced in Charybdis as a function of power-supply current and position.