

Affect of Tuning Various Harmonics of Low Field Dipoles

M. Q. Barton

May 1973

Collider Accelerator Department
Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

Notice: This technical note has been authored by employees of Brookhaven Science Associates, LLC under Contract No.AT(30-1)-16 with the U.S. Department of Energy. The publisher by accepting the technical note for publication acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this technical note, or allow others to do so, for United States Government purposes.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Studee's report — M of Barton

Time scheduled 0400 - 0600 2 - May - 73

Time actually run 0530 - 0600 "

Purpose of experiment was to check effect on intensity of tuning various harmonics of low field dipoles.

Program prepared by John Smith some months ago runs like a page on operating system. Harmonics are computed using simple azimuthal position as angular variable and constant weighting of dipoles (i.e. p -function difference ignored). Because of this simplification, round off errors in computation, and saturation of some power supplies, perfect orthogonality between various Fourier components does not exist.

Due to time limits, only ran $\sin 90$, $\cos 90$ vertically. Instead of starting from no correction, used additive correction to set derived by John Herrera based on orbit correction.

at each harmonic setting, beam intensity was observed for 6-7 pulses and averaged.

attached as a sample page of the J. Smith program and the results observed. The corrected orbit is consistent with optimum intensity - at least for this harmonic.

	READINGS		SETTINGS	
+	7COS	2484	2459	0
+	7SIN	-1440	-1515	0
+	8COS	-149	-122	0
+	8SIN	-581	-540	0
+	9COS	2342	2362	0
+	9SIN	1523	1487	0
+	10COS	-1053	-1013	0
+	10SIN	1321	1331	0
+	11COS	-1794	-1962	0
+	11SIN	-780	-859	0
+	RESET			
+	HOLD			
+	PRINT	NO		
+	SET		SET	0
+	INTEN=	1046		
+	TUNE	LOW	A10	EXP SEB
+	GET	DTA6	LOWF4	LOW
+	PRINT			OPR13

