



BNL-103944-2014-TECH

AGS.SN66;BNL-103944-2014-IR

Measure Linear Coupling at 2, 14, 26 and 28.5 GeV/c

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July 1974

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U.S. Department of Energy

USDOE Office of Science (SC)

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AGS Studies

0700-1430

The linear coupling present in the AGS at was measured at 2, 24, 26 and 28.5 Bev/c. Compensation of zero theta component of the skew quadrupole field that produces the coupling was achieved by powering the correction quadrupoles located at A-15, N-15, G-15, J-15 for the high momentum values. For the 2 Bev/c point the 24 low field skew quadrupoles were used. The required currents for the high field corrections did not quite track the momentum change.

Momentum (Bev/c)	$\beta\gamma$	I_Q (amps)
2	≈ 15	≈ 29
24	≈ 278	≈ 52
26	≈ 30	$\approx 58 \pm 3$

The additional current required could be due to saturation effects but one can conclude that essentially all of the observed coupling is due to ~~mis~~ ^{random} rotations of the main ring magnets. Previous measurements on the SEB flat top @ $\beta\gamma \approx 30$ gave an $I_Q \approx 75$ amps. The difference here could be due to the additional back by bumps, turning quads etc. that ^{are} powered during SEB operation. The measurements were made by using the 15 kV probe and moving the beam radius until one observed what the beat signal of the (9-V) δ_0 component of the H & V difference signals had a zero amplitude null. This assured that the beam was then on the coupling line.