

G. Levine
BY C. Swartz DATE 11/7/60 SUBJECT A Calibration Curve for SHEET No. 1 OF 2
CHKD. BY _____ DATE _____ Cosmotron Ionization Chambers JOB No. GSL-1
DEPT. OR PROJECT Cosmotron

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BNL 6899

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Attached is a curve relating the output signal from the thin walled ion chambers to the number of protons passing through the chamber. Since the instrument is generally operated in a region where it is non-linear, the response is sensitive to the proton intensity of the individual pulse.* The plot therefore indicates the number of protons in a focused beam traversing the chamber in a millisecond to the voltage developed on an integrating condenser and measured on a voltmeter.

The response was checked by the measurement of activity of polyethylene foils irradiated by beams of various intensities. The ionization chambers were placed within a foot of the beam focus and operated in the usual manner, the parameters being:

Gas - P - 10 (90% Argon - 10% Methane)

High Voltage 1200 volts

Gas pressure - 5 - 7 ounces

MASTER

The point where the beam passes through the mylar faces of the chamber (the azimuthal position) is not critical. The curve is only applicable for fast RF turnoff (one millisecond spillout).

Any changes which result in a significant reduction of the time space density of the beam can be expected to result in a signal output greater than that specified by the curve, and correspondingly any increase in density will result in a lower signal.

* If the instrument is used to integrate over a number of pulses it is therefore imperative that the pulse intensity be reasonably constant and that the total number of pulses be recorded so that the average signal can be used to determine the pulse intensity.

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GSL-1

ION CHAMBER RESPONSE
FAST TURN OFF
FOCUSED BEAM

