

## Origin of BLM readout system sensitivity specifications:

*Note 5/17/81 of R. Shafer says:* limits for energy deposition in TeV magnets

slow loss 8 milliwatts/gram

fast loss 0.5 millijoule/gram

1 Rad = 100 ergs/gram;

1 millijoule/gram = 100 Rads

=> slow loss 800 Rads/sec

fast loss 50 Rads

Range: 1% of quench level to 10 times quench level.

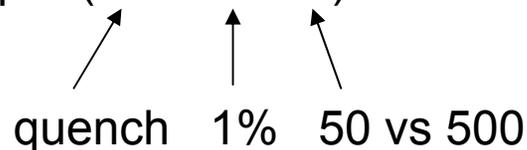
BLM detectors see between 1/50 and 1/500 of the level into the magnet coil..

- the 1/50 is more consistent with measurements in left-bend tests.

Upper Rads Rate limit in BLM set by  $800/50 \times 10 = 160 \text{ Rads/sec}$

Upper Rads (fast) limit in BLM set by  $50/50 \times 10 = 10 \text{ Rads}$

Lower Rads Rate limit in BLM set by  $\text{Upper}/(10 * 100 * 10) \text{ Rads/sec}$

  
quench    1%    50 vs 500

Lower Rads (fast) limit in BLM set by  $\text{Upper}/10,000$

*Note 2/25/82 of R. Shafer says* 1 Rad = 70 nC in BLM

## Present Tevatron System Parameters:

*Note of R. Shafer 3/1/82* – test of logarithmic integrator- shows

full scale current =  $2 \times 10^{-5}$  amps ( 260 rads/sec)

full scale charge =  $10^{-6}$  C (14 rads)

lowest scale current = 0.2 nA

lowest scale charge = 0.1 nC

time constants; slow = 1/16 sec, fast = 20 microsecond