

MEASUREMENT OF DISPERSION AT THE SLIT

2014.09.04

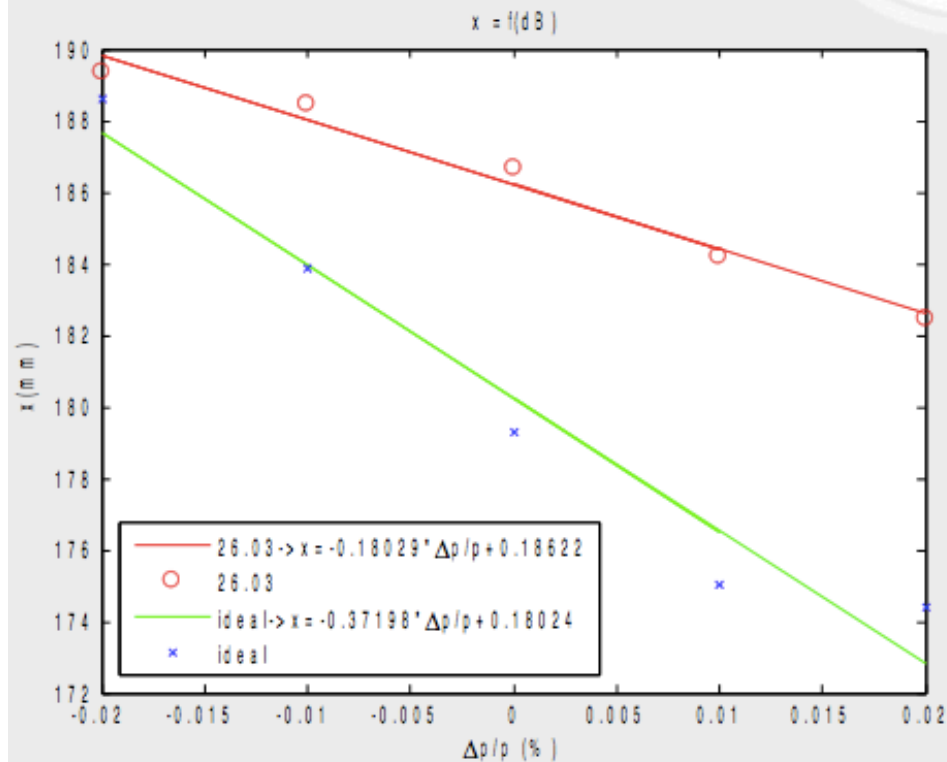
Tom Uesugi, et al.

PAST RESULTS

Equivalent momentum method

L. Volat, July 17

	D_{slit} measured	rsquare	D_{slit} by SAD	relative error
ideal case	-0.371	0.955	-0.984	62%
settings of 03.26	-0.180	0.954	-0.431	58%

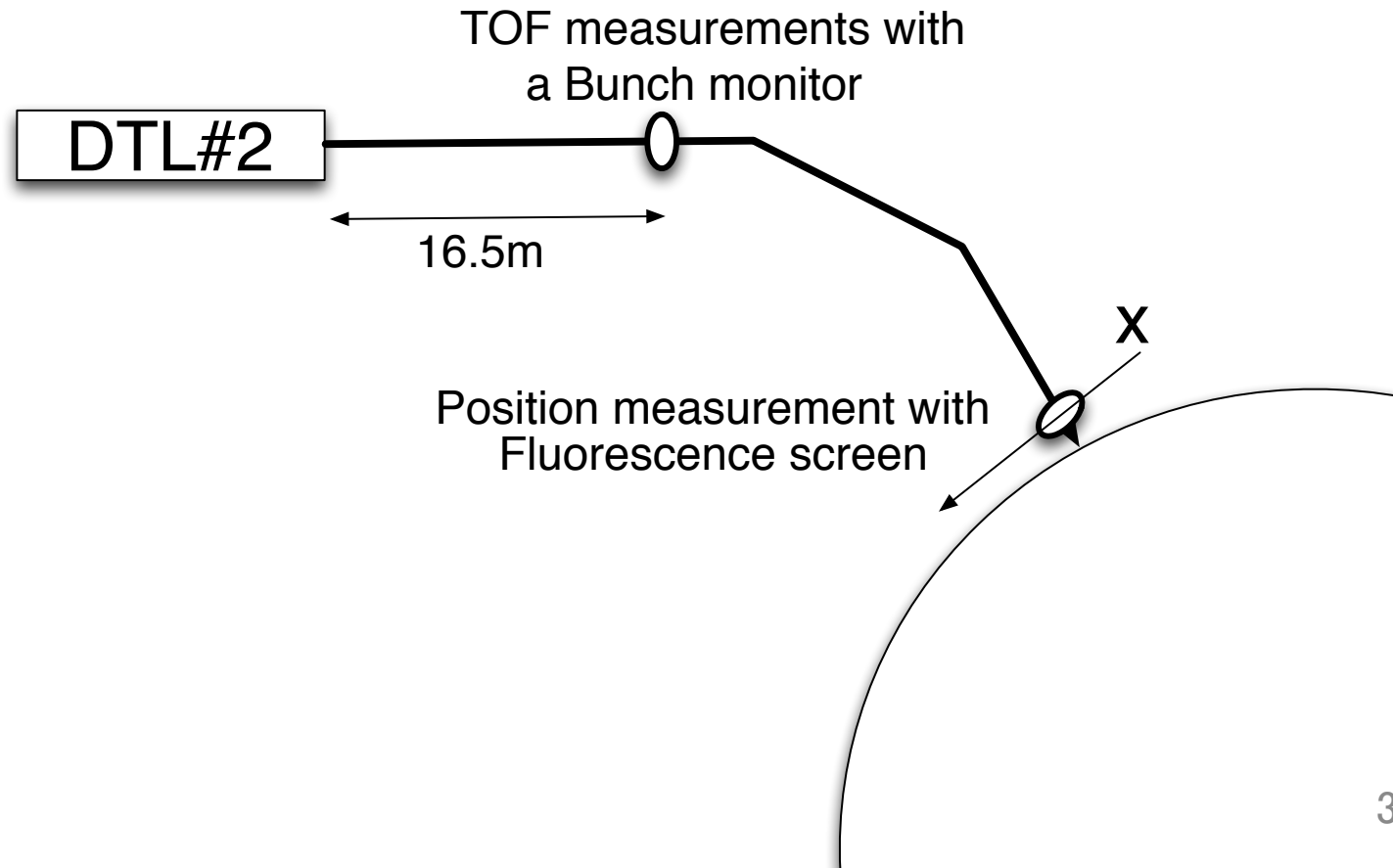


The measured values are less than the half of the measured ones.

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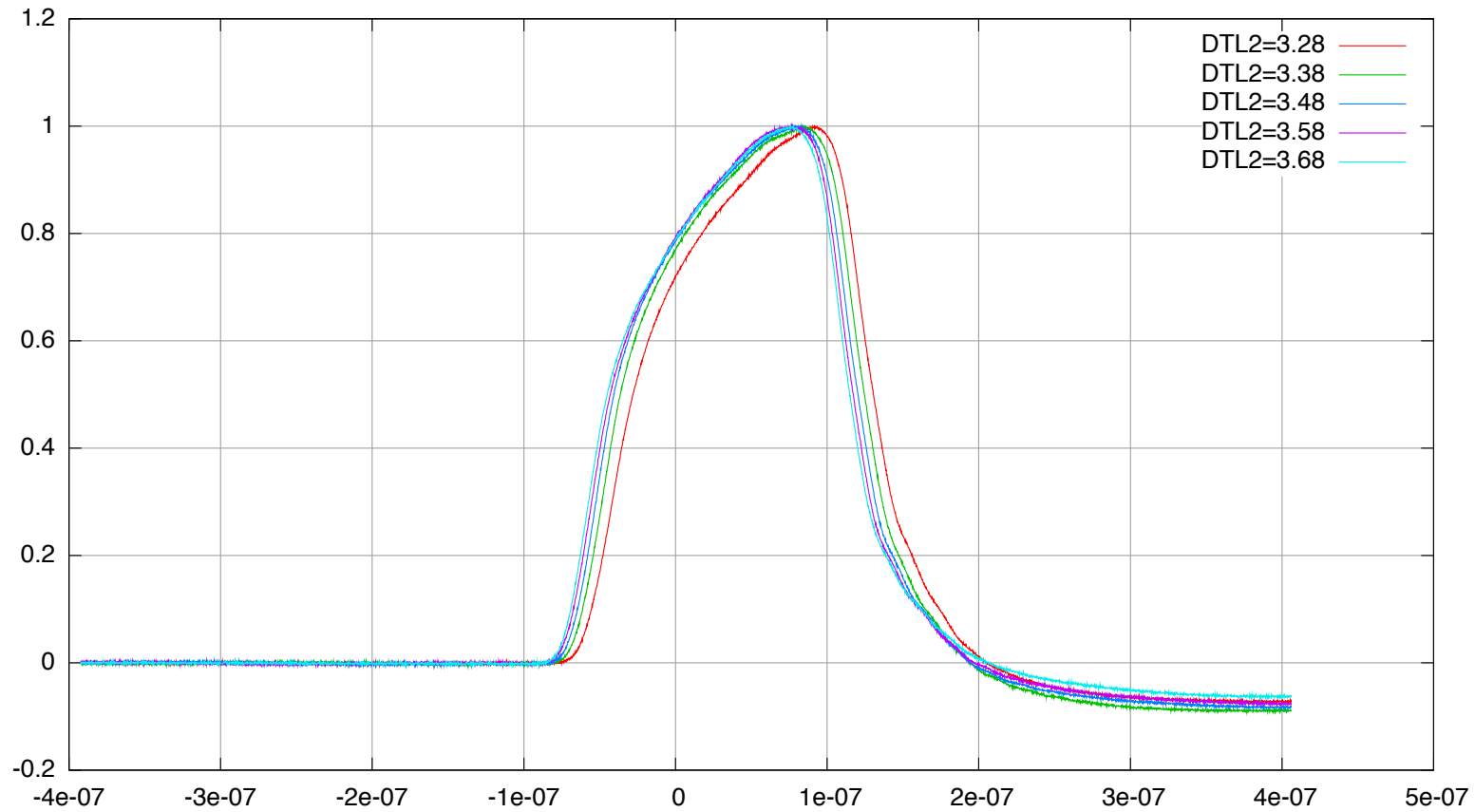
DIRECT MEASUREMENTS USING OFF-MOMENTUM BEAMS

The beam energy depends on the field strength of the DTL#2



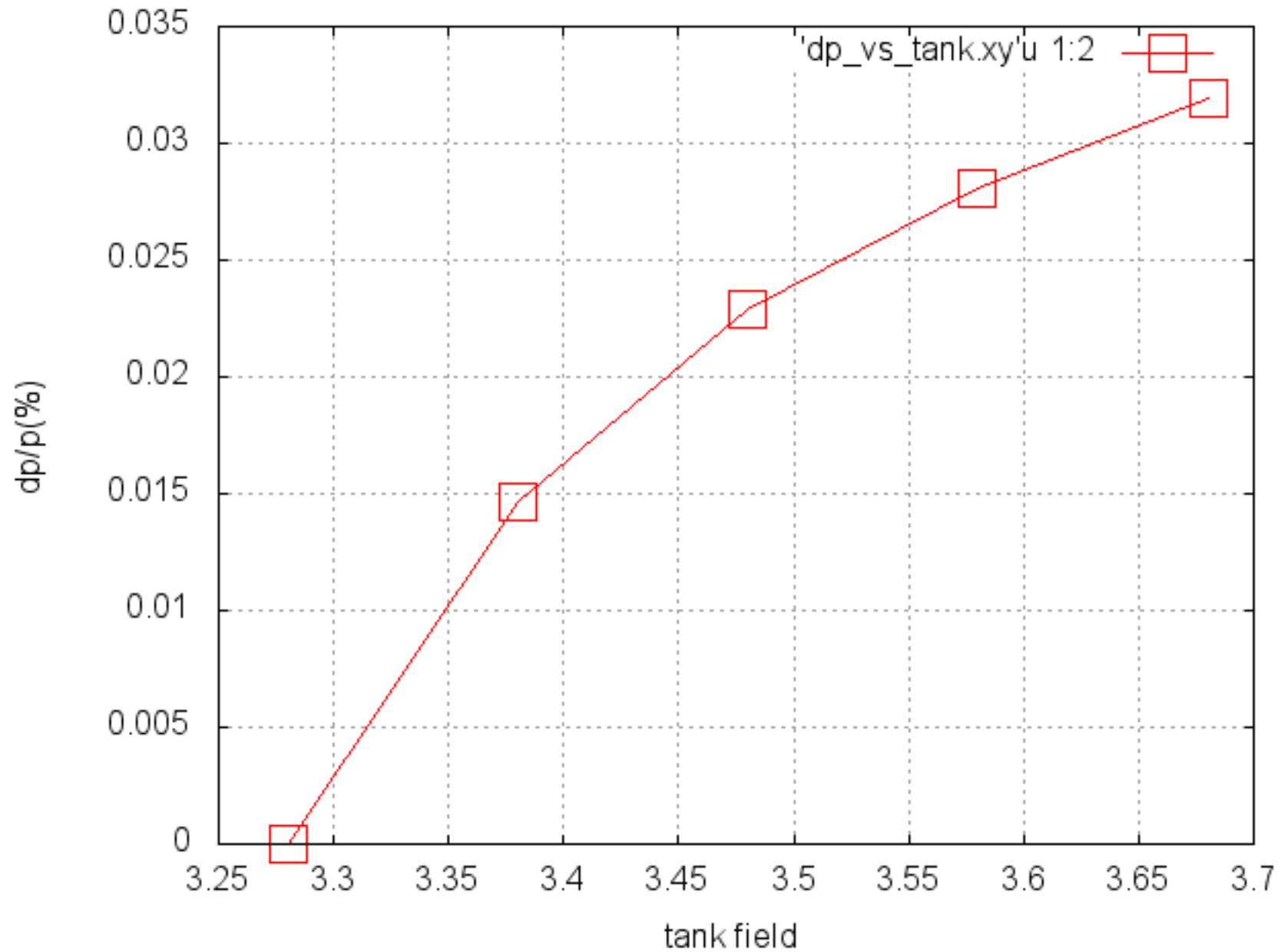
TOF DEPENDS ON DTL2 FIELD

bunch monitor signals for different DTL2 fields

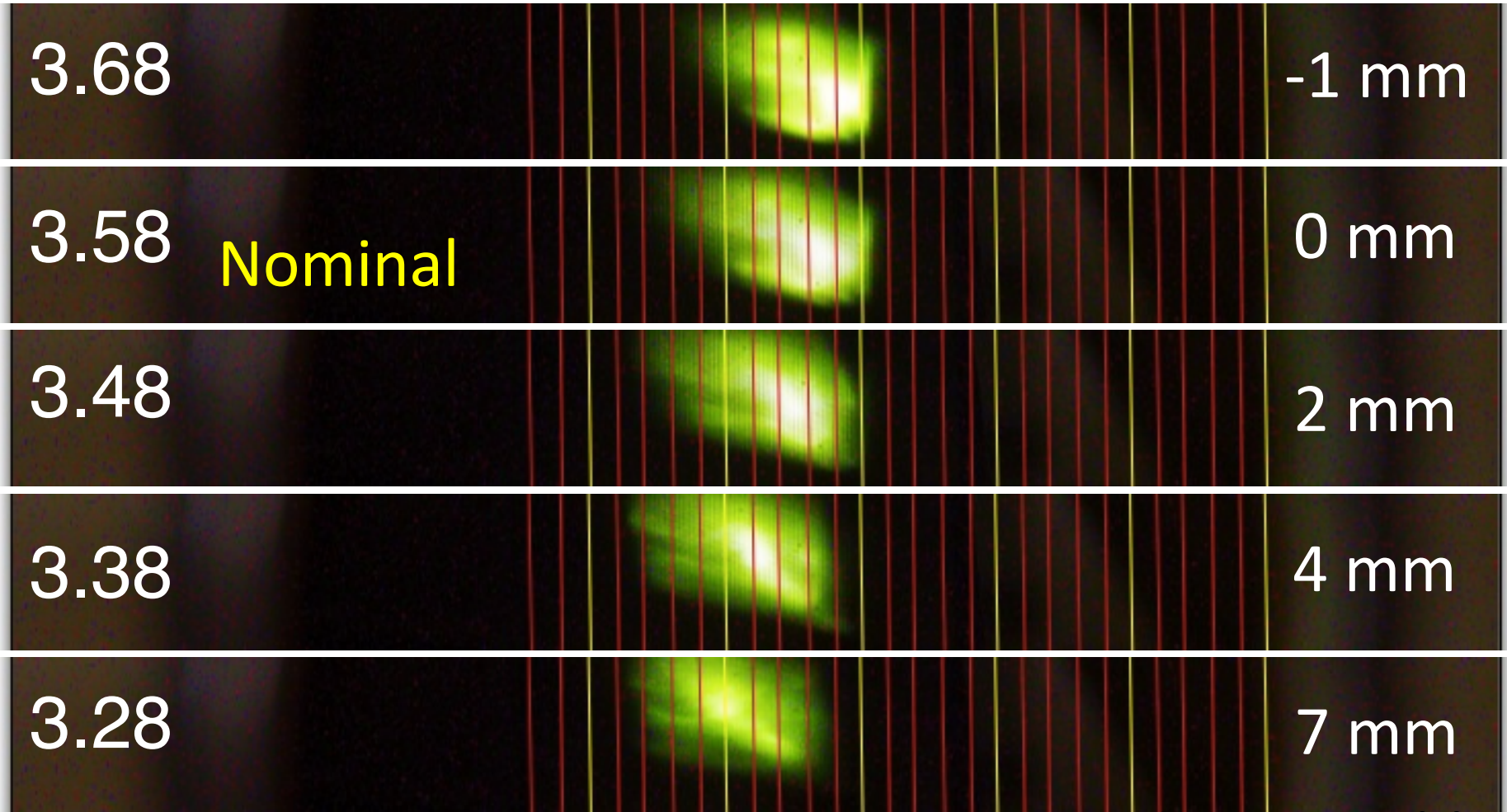
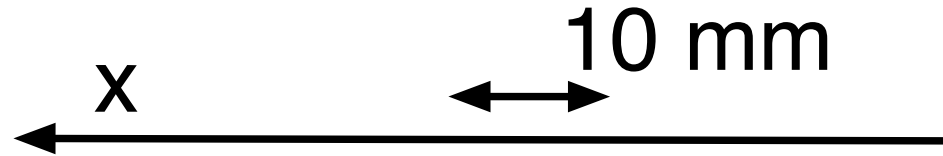


$$\frac{dp}{p} = -\gamma^2 \frac{dT}{T}$$

MOMENTUM VS DTL FIELD



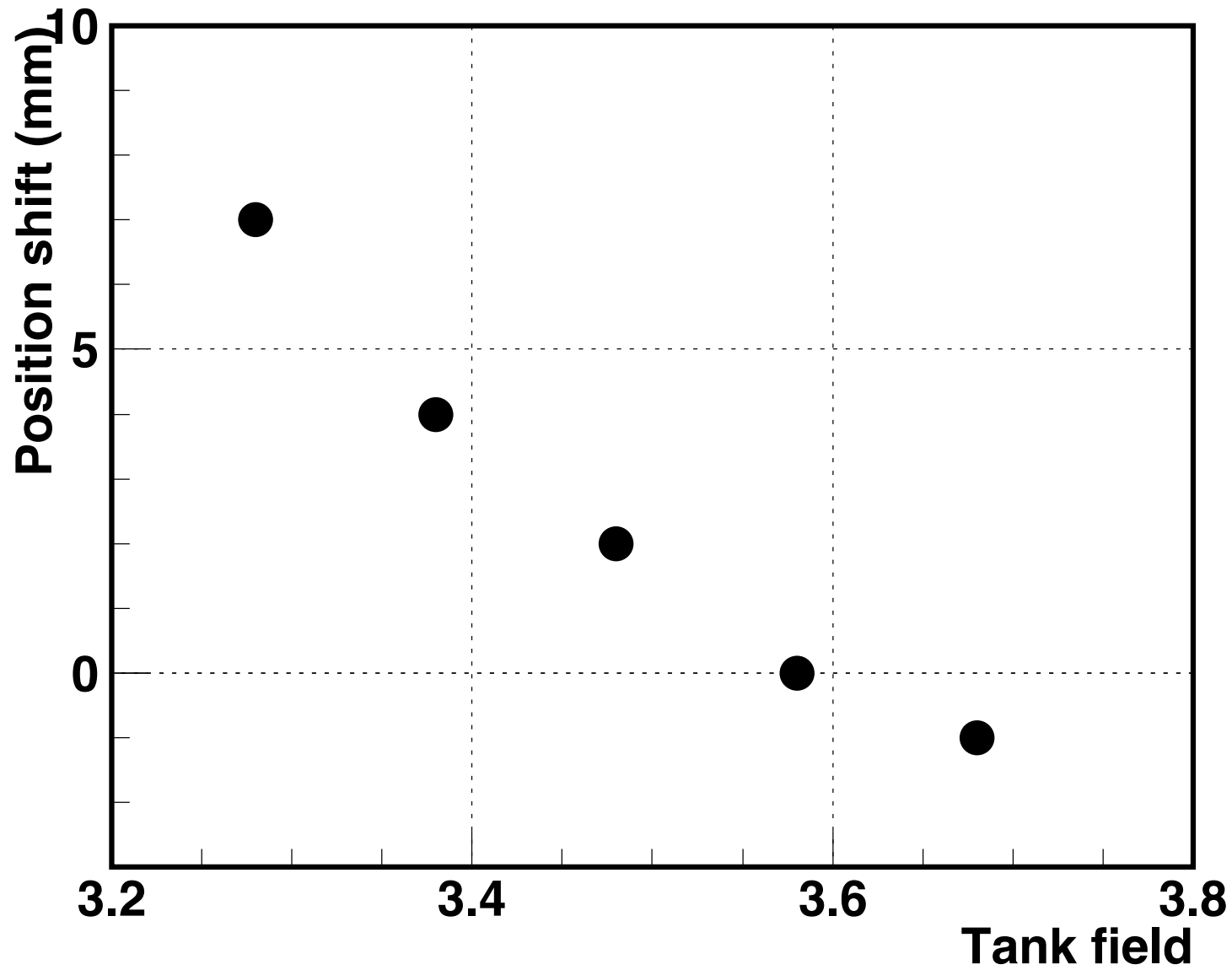
PROFILE AT MP



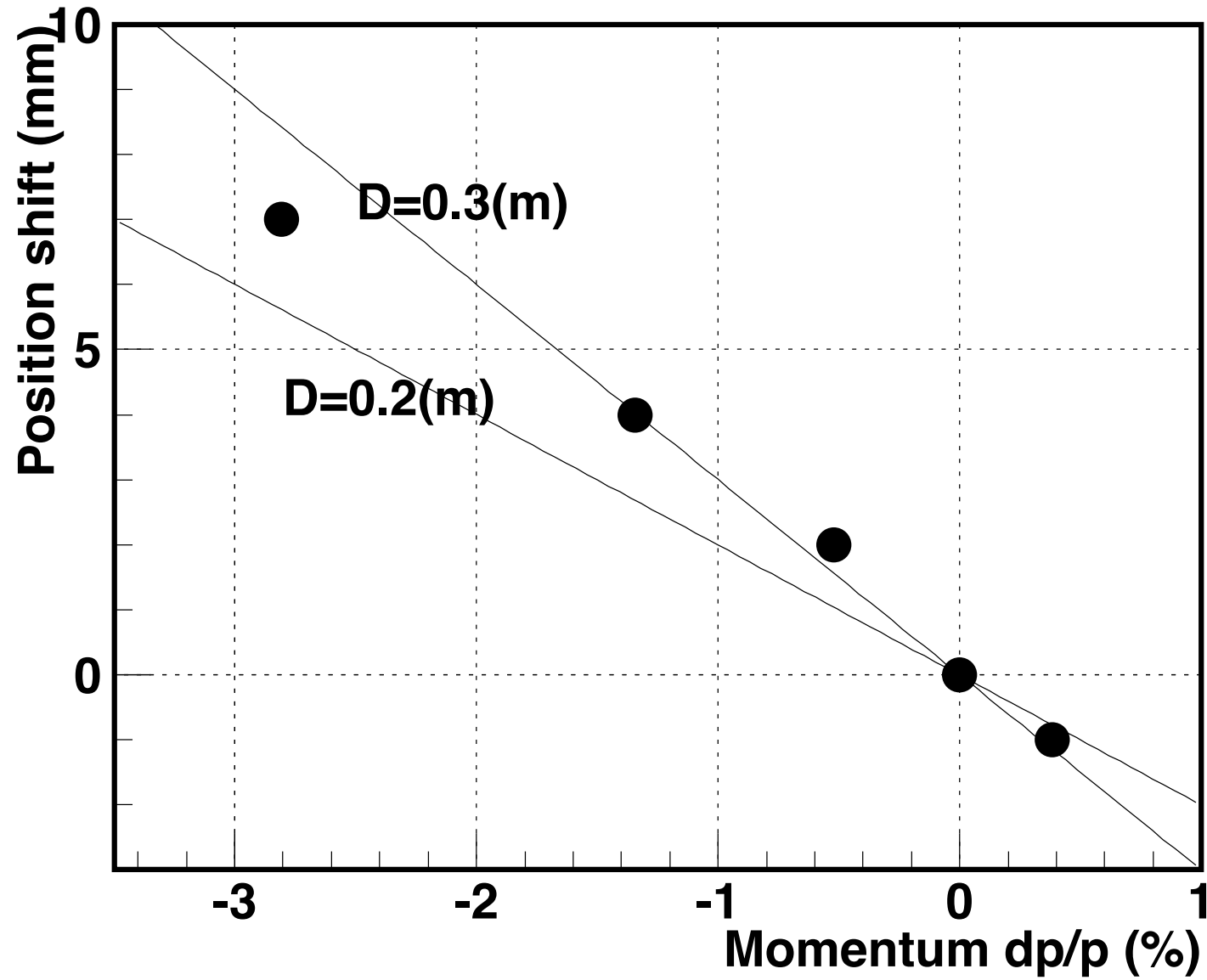
DTL2 tank field

Center position

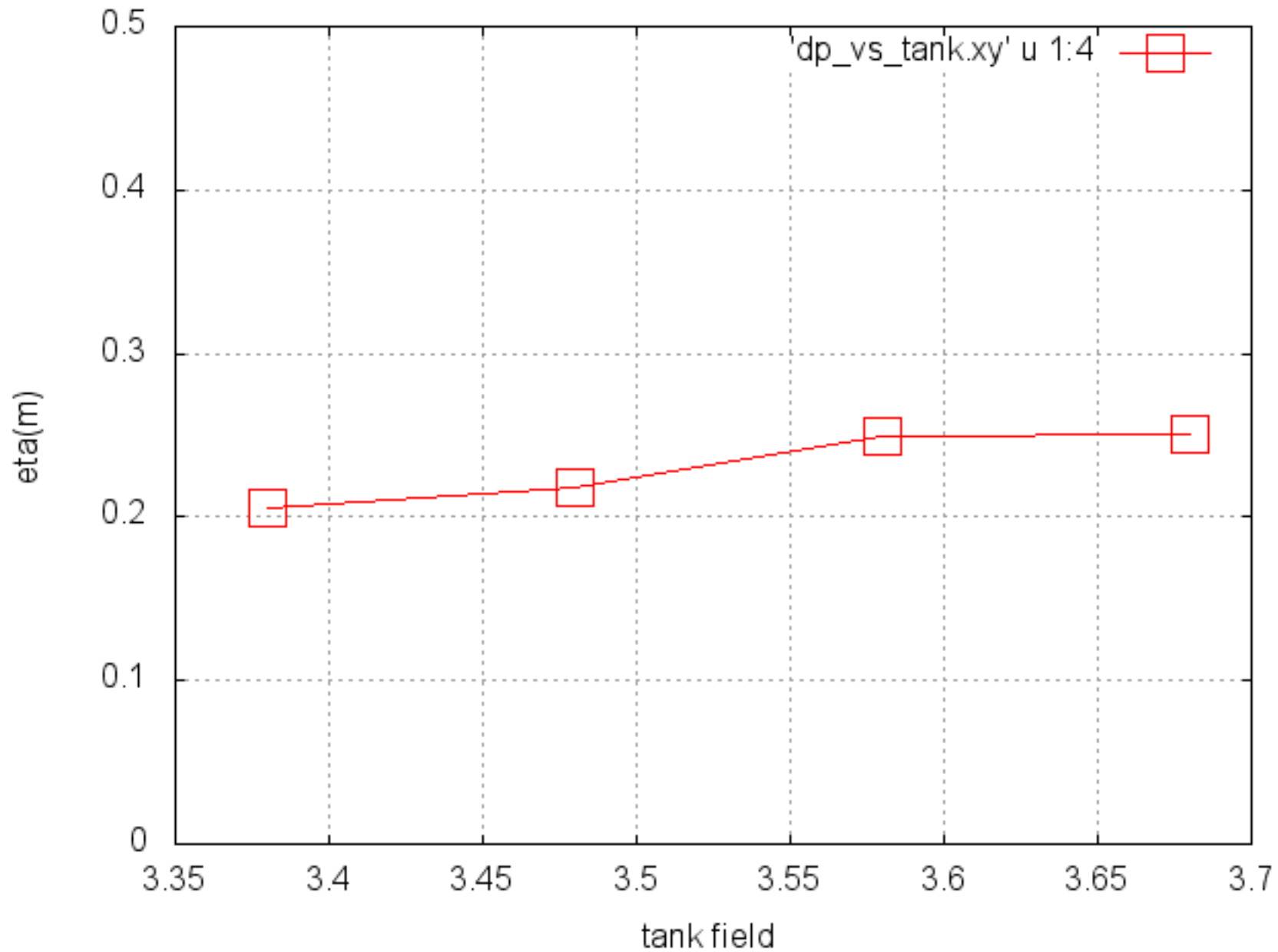
CENTER POSITION VS TANK FIELD



POSITION VS MOMENTUM

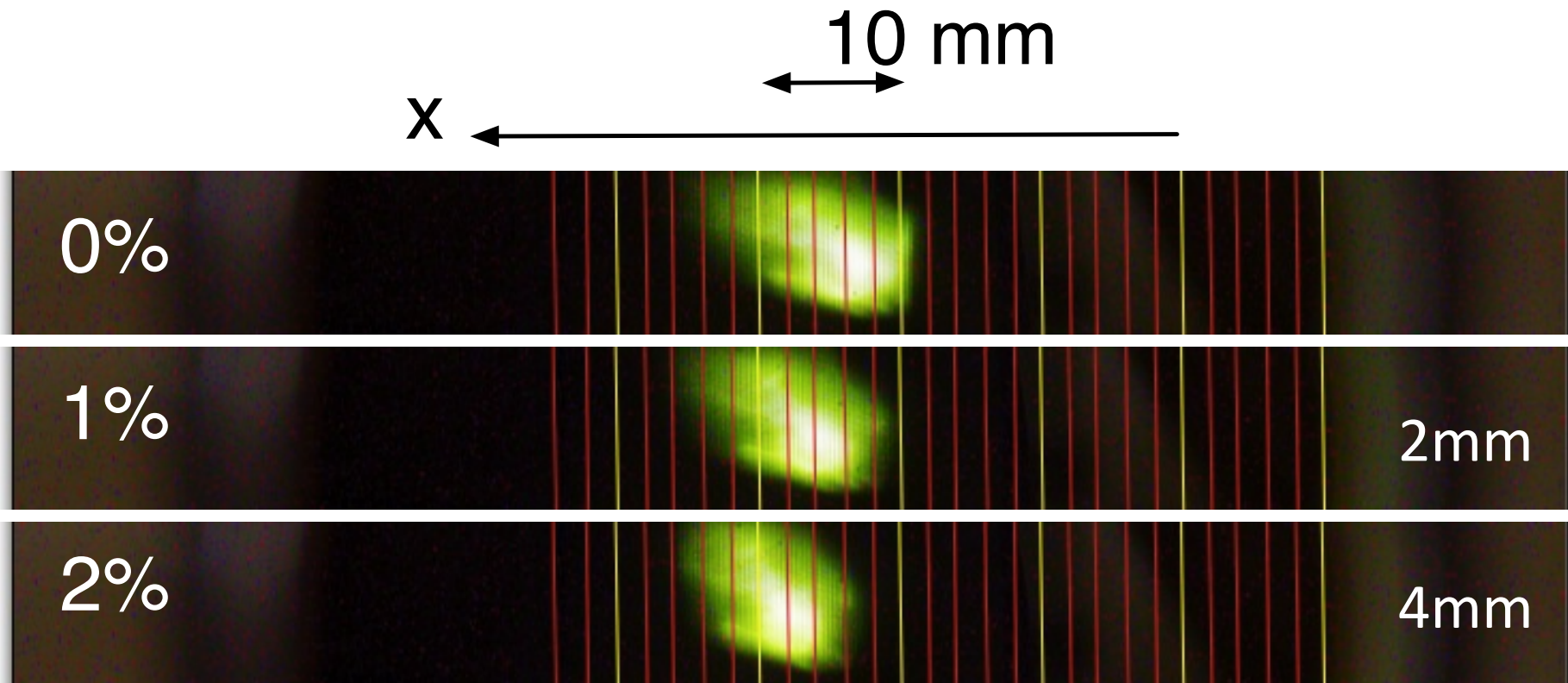


DISPERSION FUNCTION



EQUIVALENT MOMENTUM METHOD

Strengths of HMBT magnets after BM were changed.
DTL2 field was fixed at 3.58.



Dispersion is about 0.2m

SUMMARY

- Dispersion at MP(slit) was measured using off-momentum beams.
- Result was 0.22m, which was consistent with past measurement (0.18m) by Ludovic.
- With this method we will measure the dispersion in the ring (foil), this week.