

Comparison of collared coils measurement methods

11T Dipole Technical Meeting

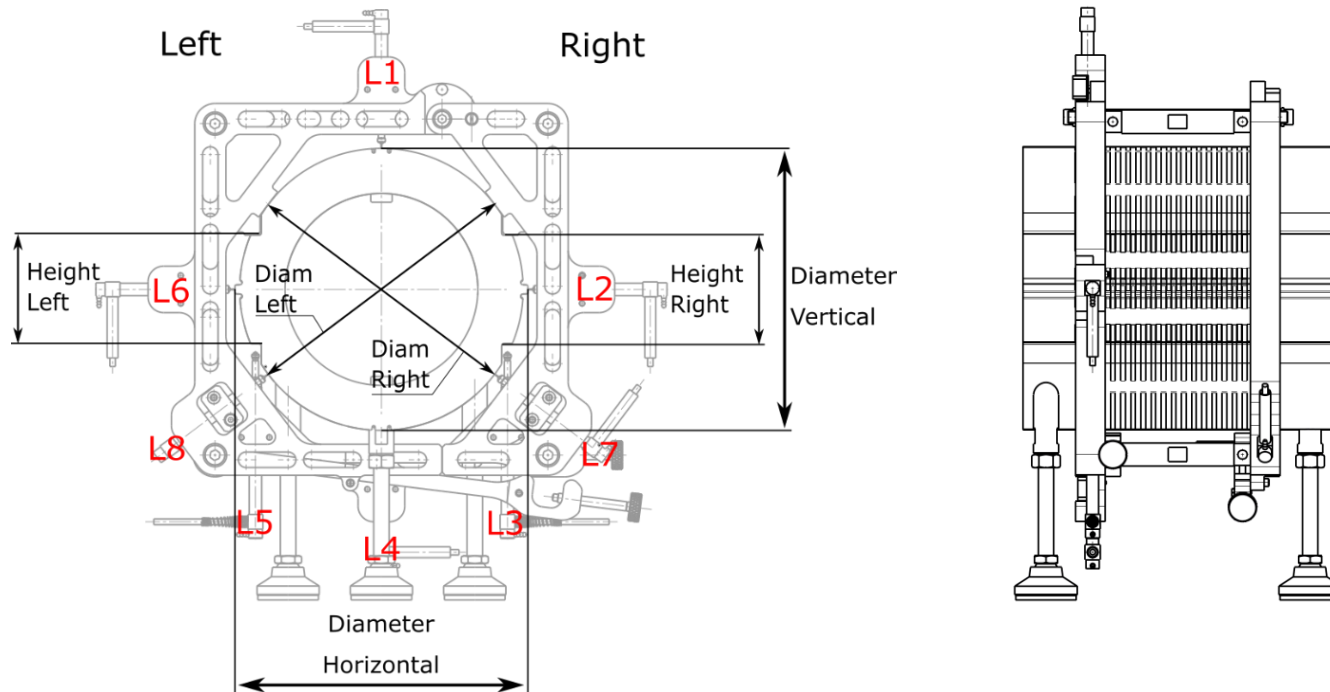
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Outline

- LMF CC dimensions and tool description
- Measured dimensions of CC 201 and 202
- Deviation between measurements
- Tower measurement of calibration piece

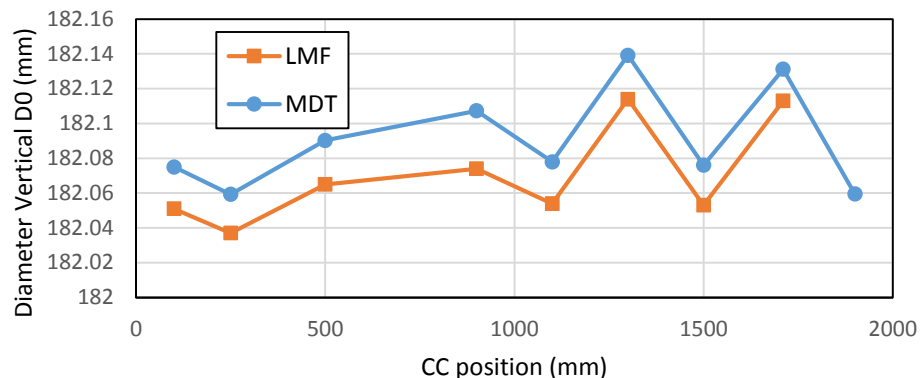
LMF CC dimensions and tool description

- The tool is assembled around the collared coil (using hinge and screws);
- There are 8 LVDT distance sensors (L1 to L8) that measure 6 dimensions:
 - Diameter: Horizontal, Vertical, Left 37deg, Right 37deg;
 - Height: Left, Right
- Sensor head features flat round cross-section of 4.75 mm diameter;
- Each measurement starts (and finishes) with the calibration;
- Collared coil is measured in at least two runs (due to supports).

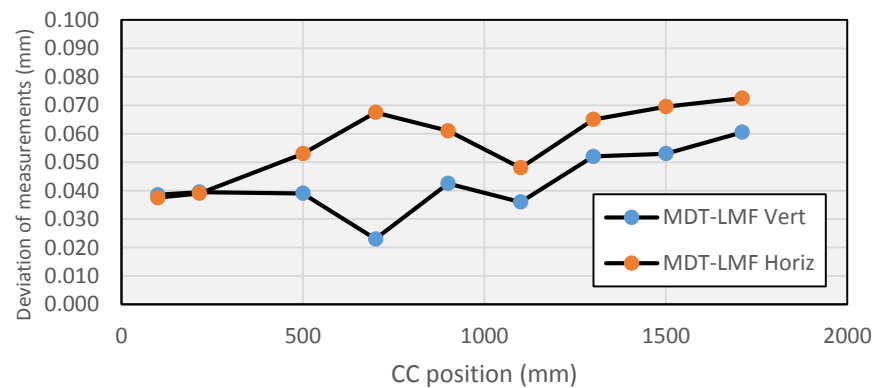
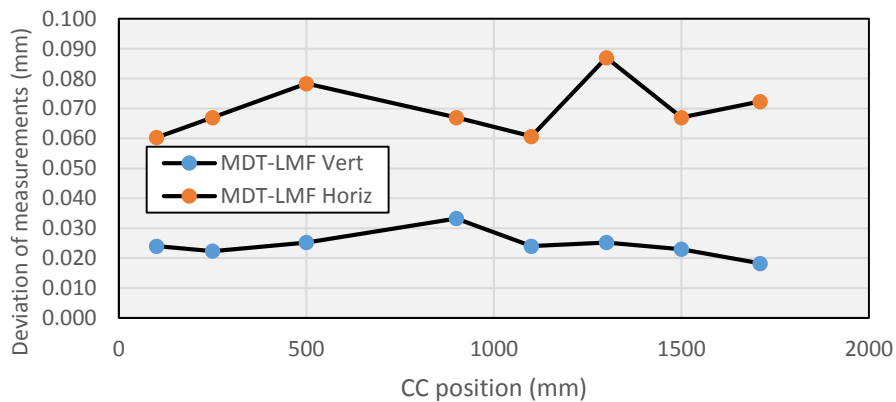
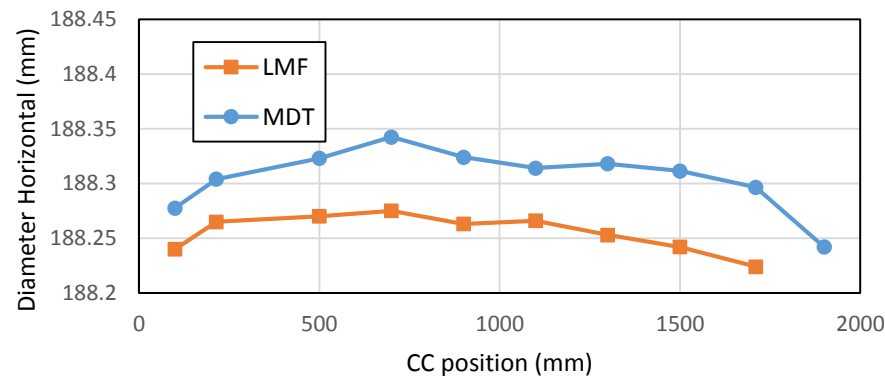
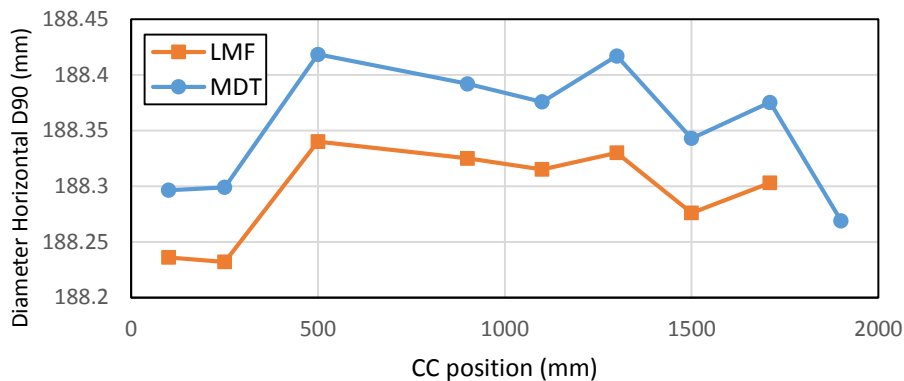
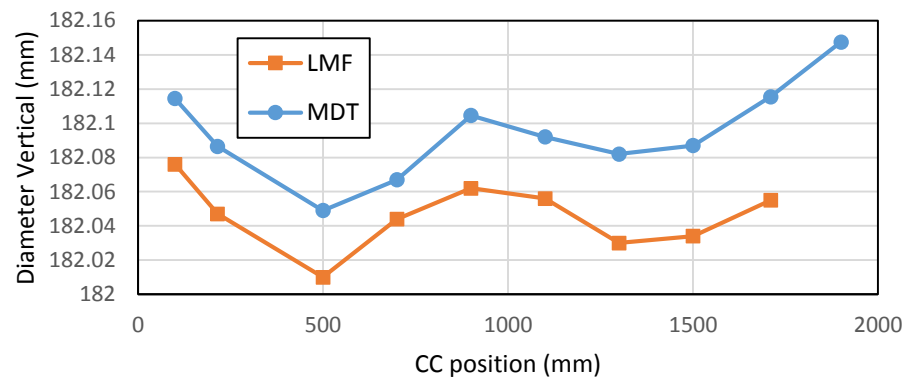


CC dimensions, LMF and MDT measurements

CC201



CC202



CC dimensions, LMF and MDT measurements

- Average measured values

		LMF avg (mm)	MDT avg (mm)	MDT-LMF avg (mm)
201	Diameter Vertical D0	182.070	182.091	0.024
	Diameter Horizontal D90	188.295	188.354	0.070
202	Diameter Vertical	182.046	182.095	0.043
	Diameter Horizontal	188.255	188.305	0.057

Vertical tower measurement of CC calibration piece

- In order to investigate the source of shift between two measurement methods, CC calibration piece used during LMF measurement was measured with vertical tower in MDT;
- Calibration piece was measured in the measurement lab (main workshop) with CMM.

	Vertical diameter (mm)	Horizontal diameter (mm)
CMM	182.016	188.273
Vertical Tower	1	182.093
	2	182.097
	3	182.092
	Avg	182.094
Difference avg Tower - CMM	0.078	0.074

