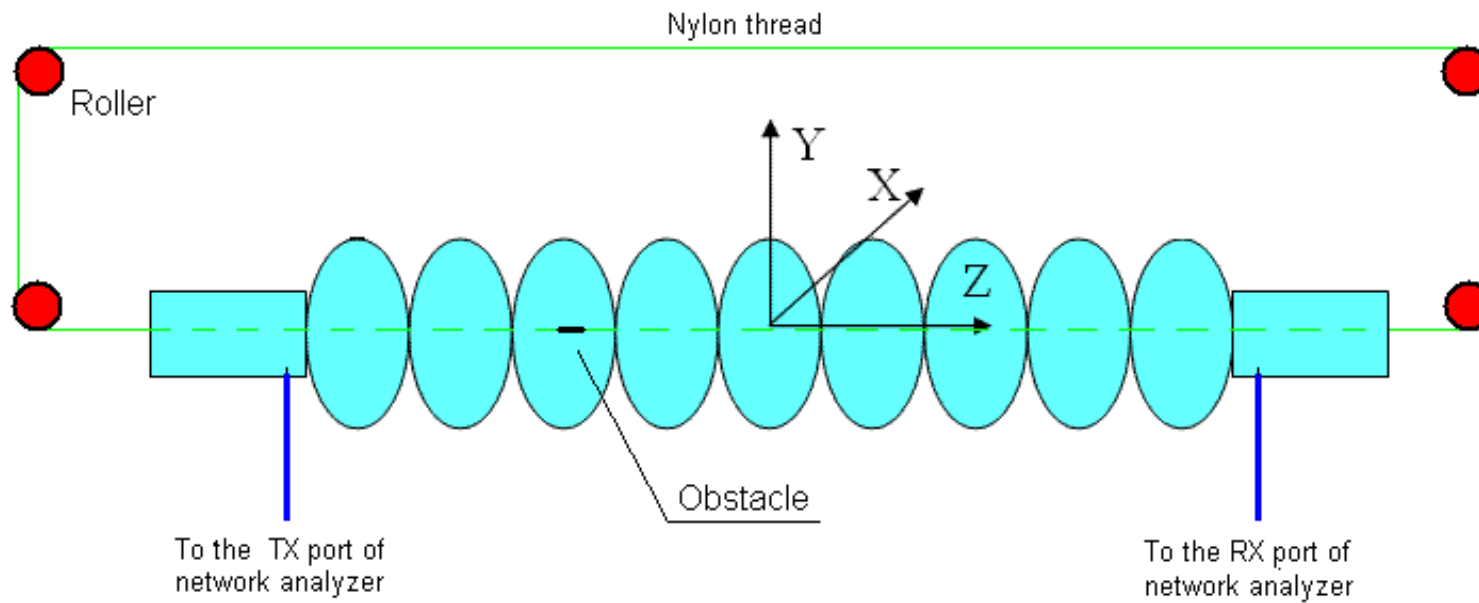


Field measurement in TESLA cavities

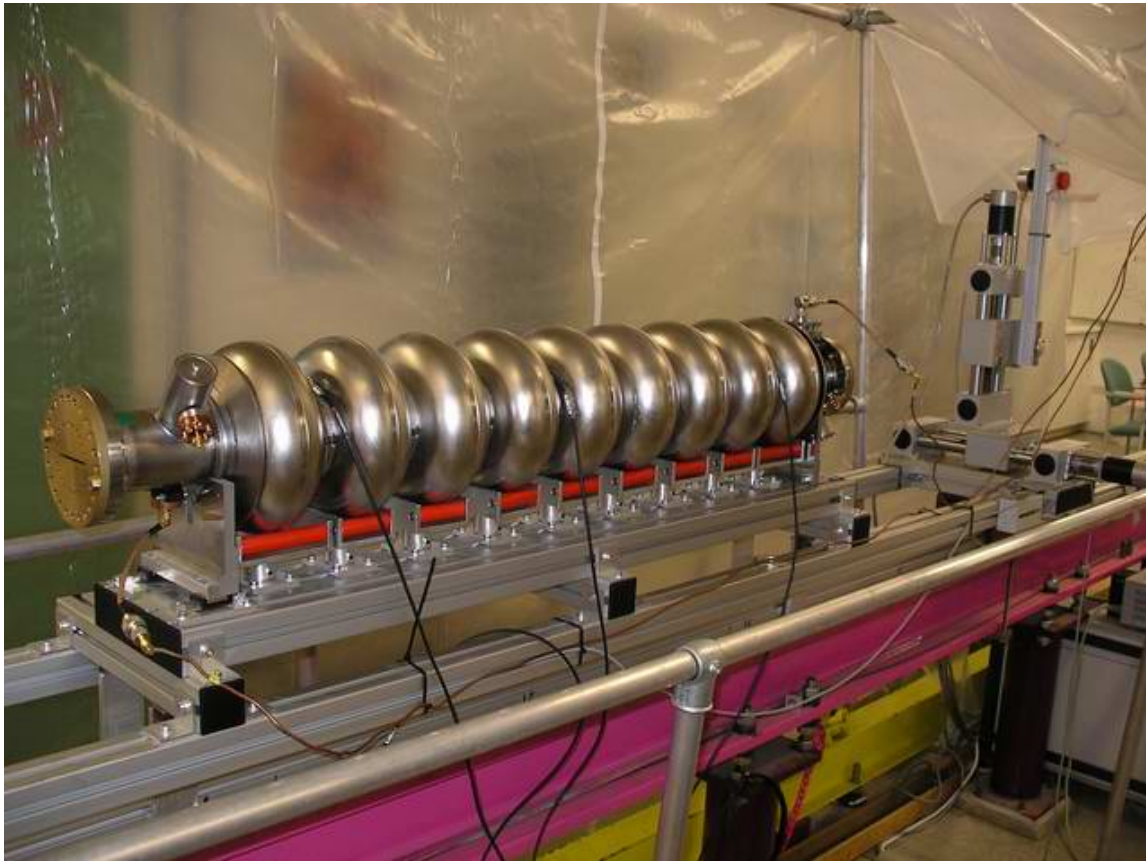
Anton Labanc, DESY, MHF-SL

Beam Dynamics Meeting, February 19-th 2007

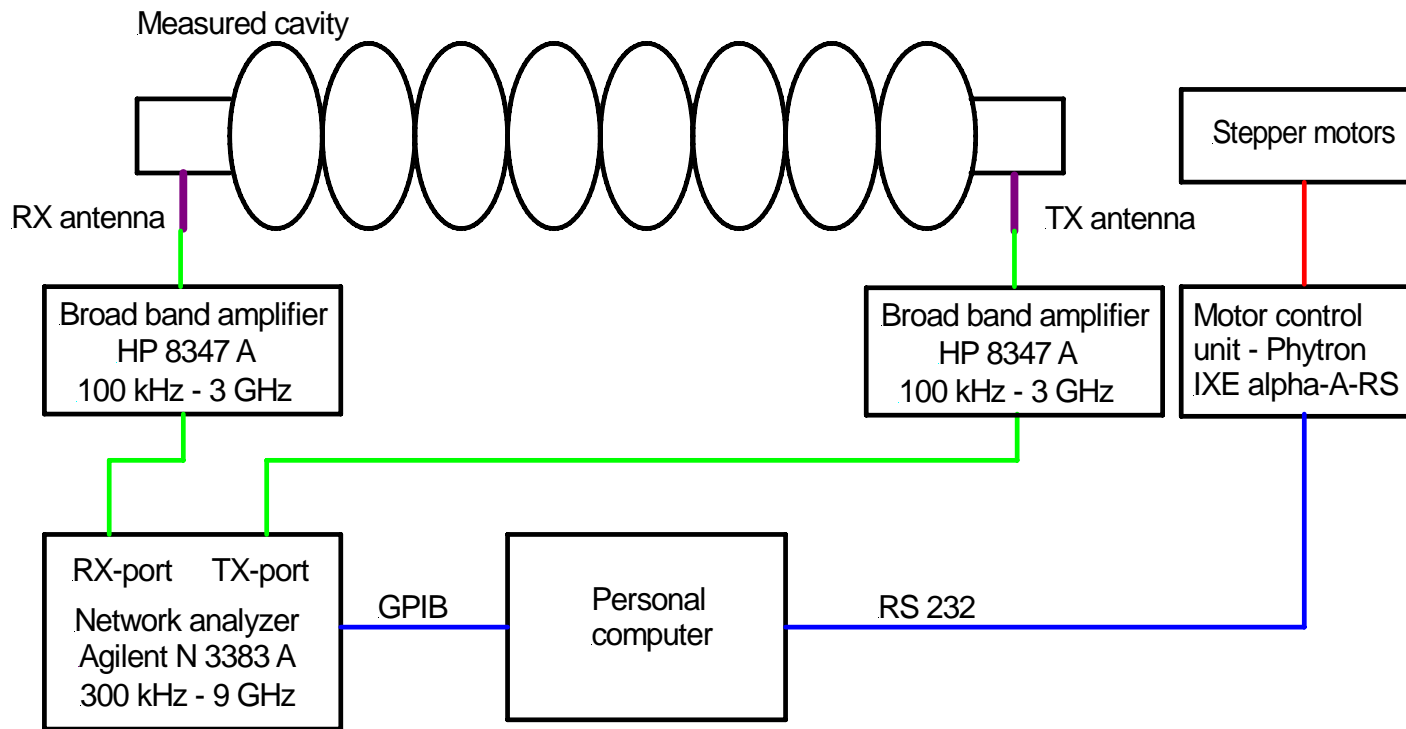
Measurement principle



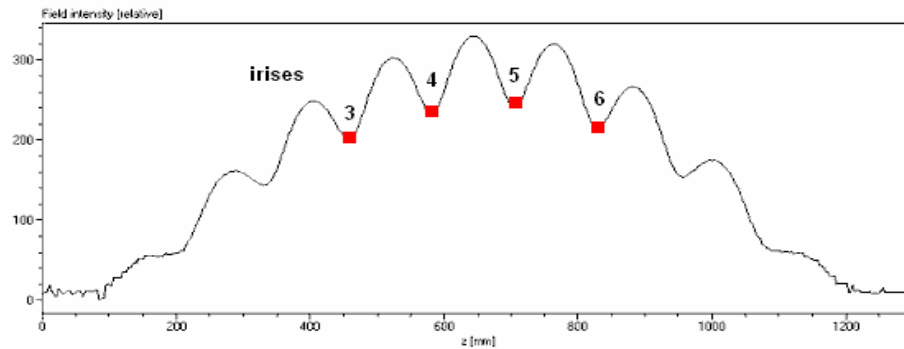
Mechanical arrangement



Instrumentation

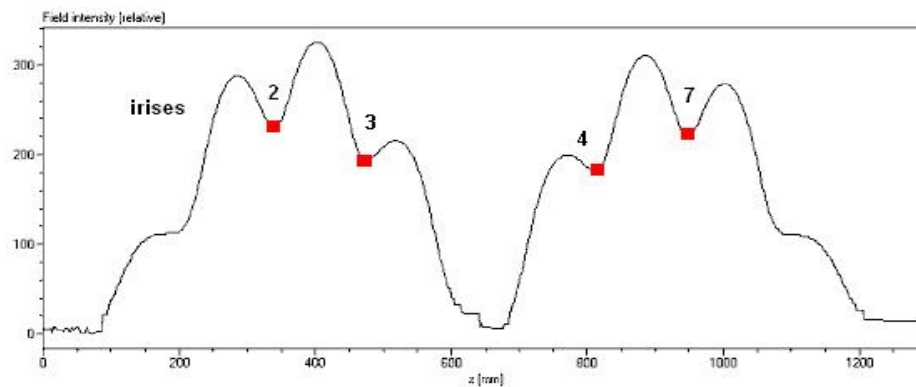


Cu cavity, TM_{010} $\pi/9$, $2\pi/9$, $4\pi/9$, beadpull measurement

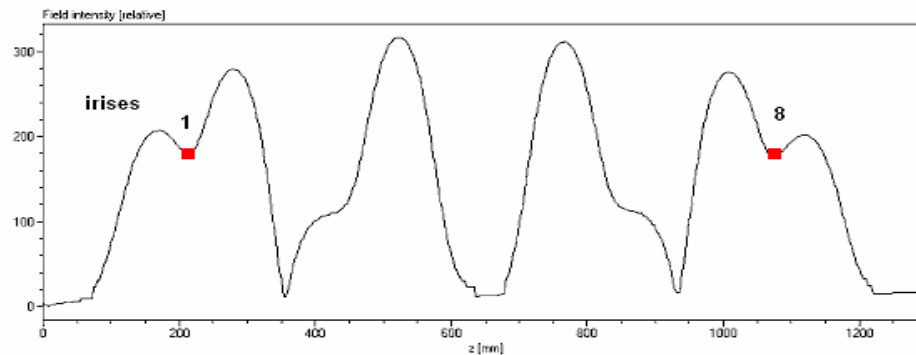


$\pi/9$

These modes was used for measurements on irises. Suitable irises for given modes are red marked -electric field intensity in the adjacent cells is not very different.

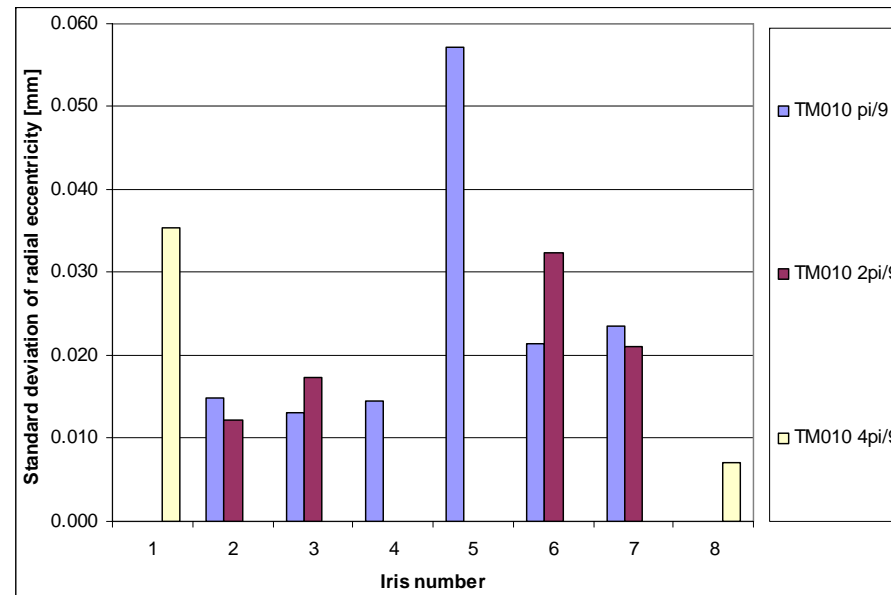
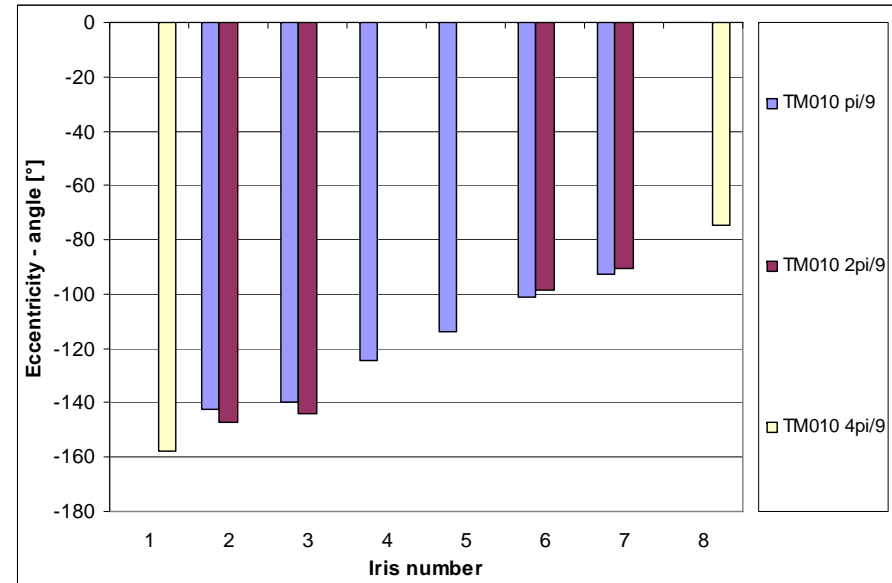
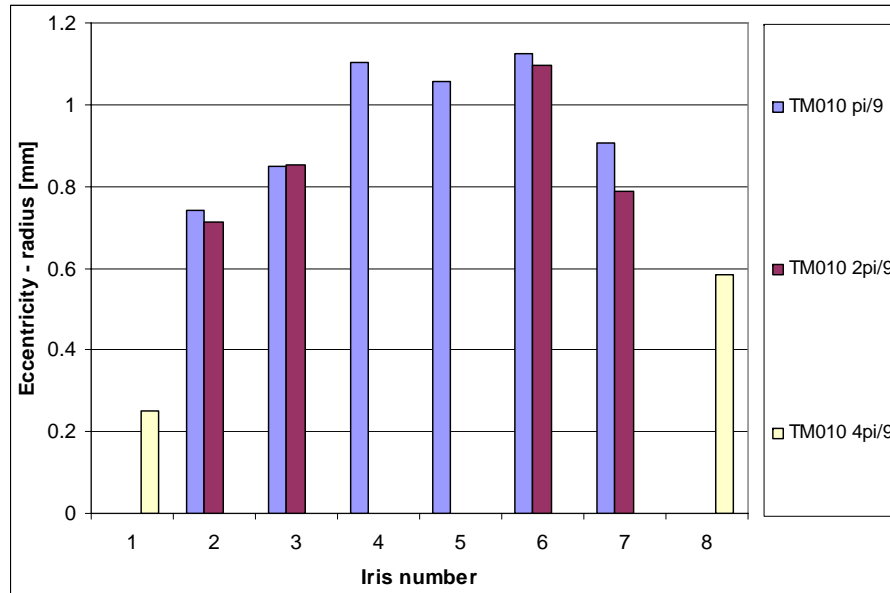


$2\pi/9$

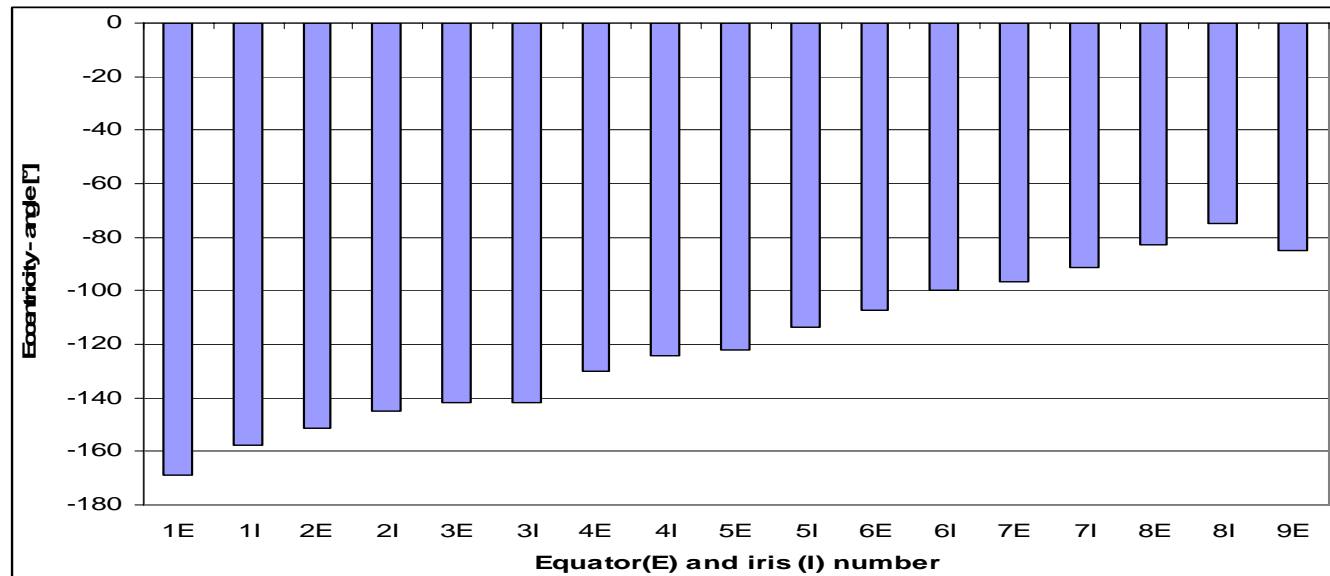
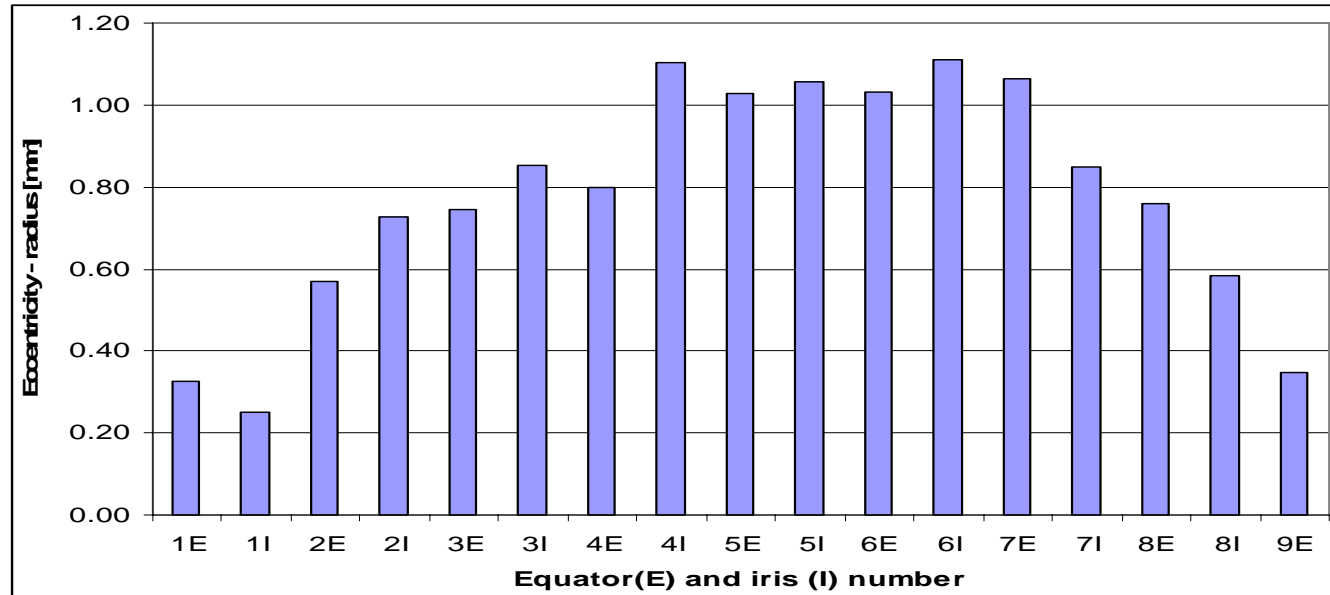


$4\pi/9$

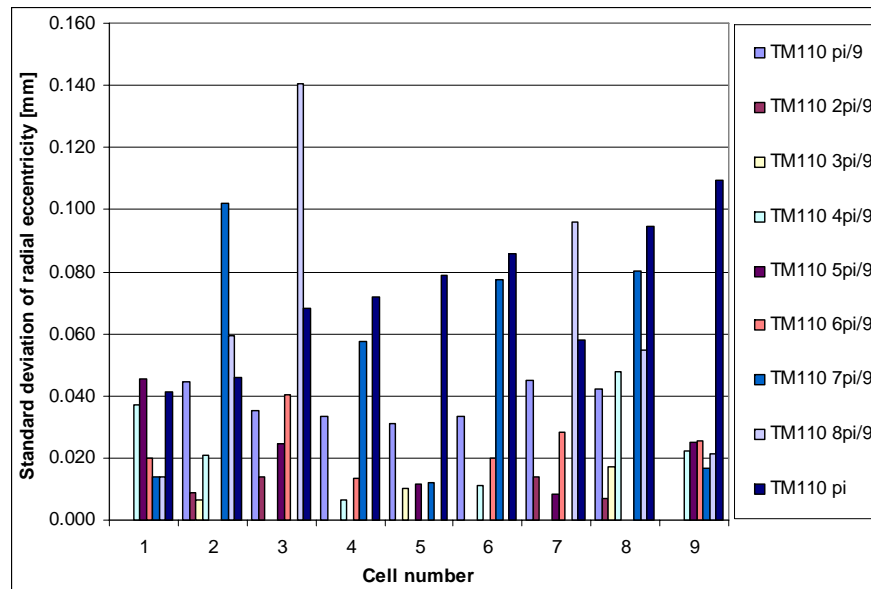
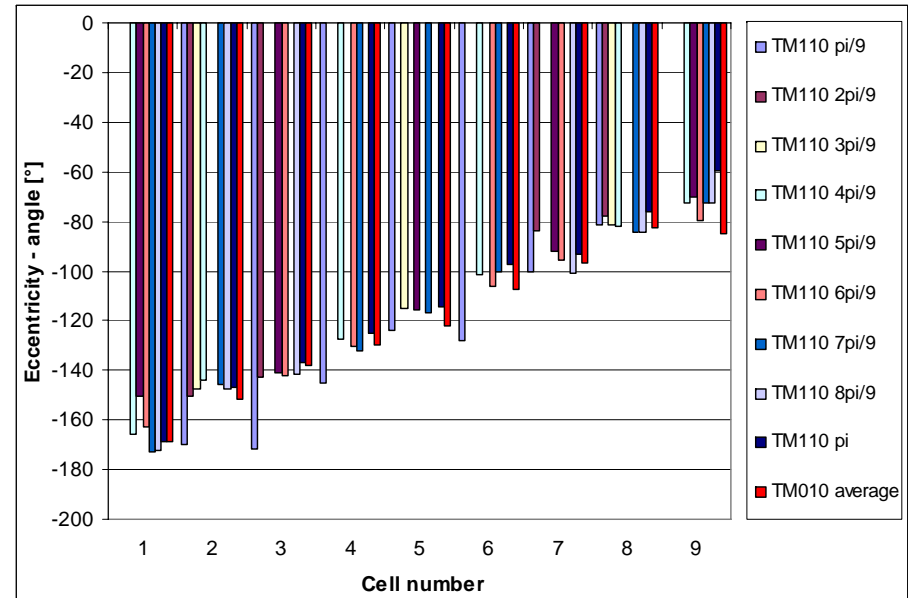
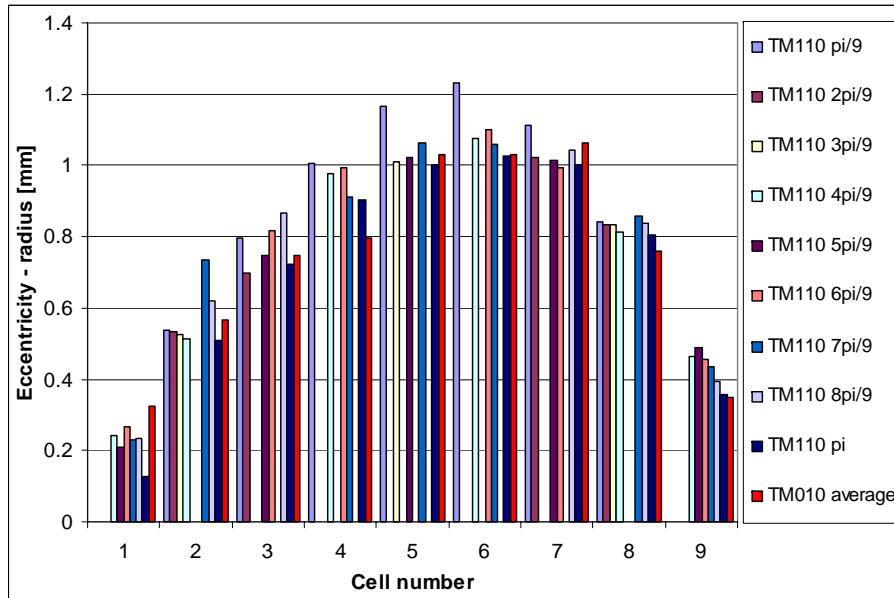
Cu cavity, TM_{010} - irises



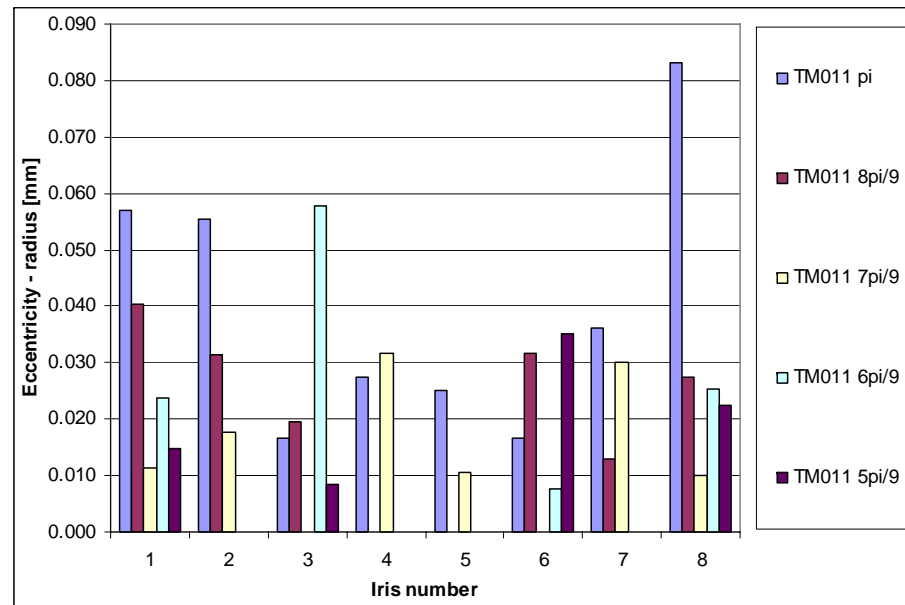
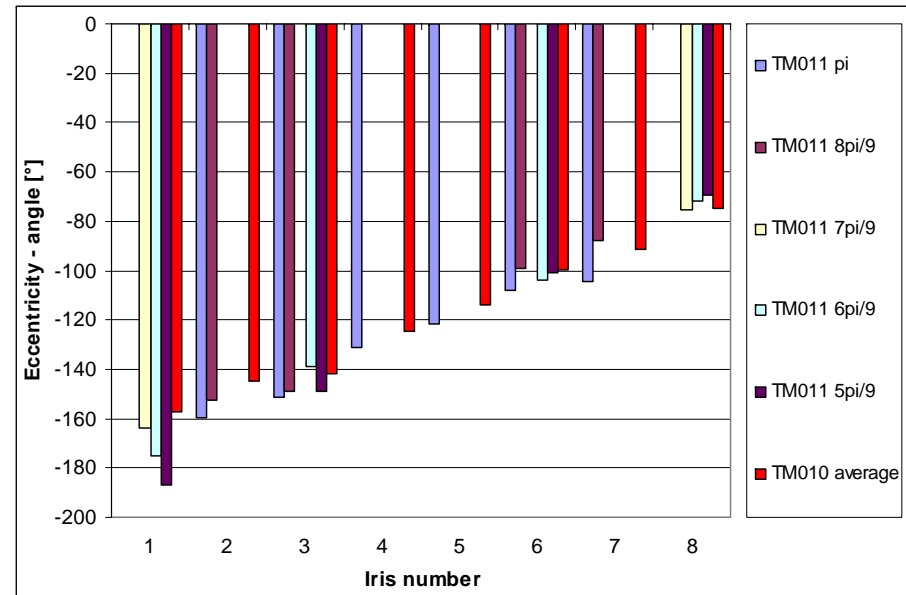
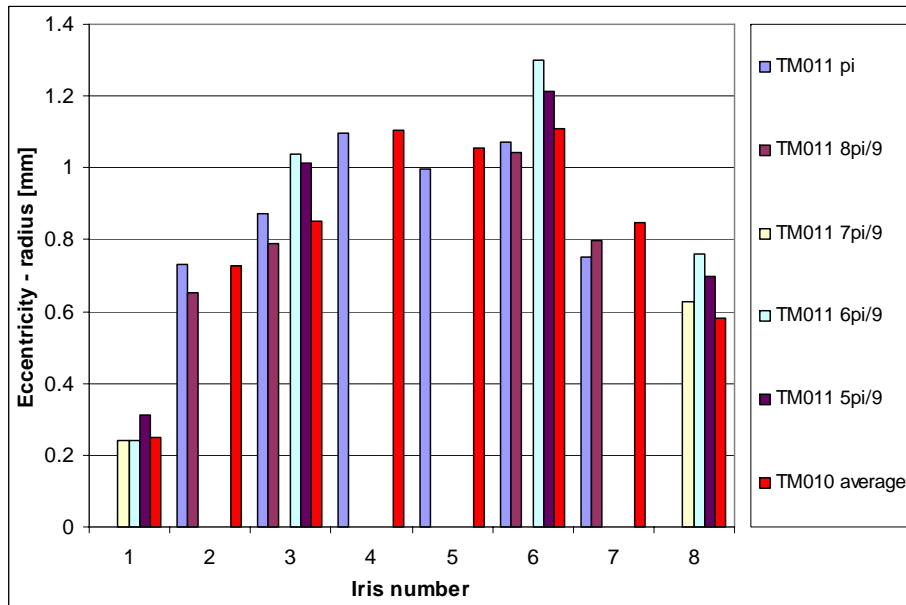
Cu cavity, TM_{010} – comparison between equators and irises



Cu cavity, TM_{110} - equators



Cu cavity, TM_{011} - irises



Z93 cavity, electrical and geometrical axis

Electrical axis

Cavity state	Equator plane 1 crossing [mm]	Equator plane 9 crossing [mm]	Tilt [μ rad]
Pre-tuned	(-0.265, 0.238)	(0.181, 0.155)	487
Final tuned	(-0.139, 0.125)	(0.392, 0.028)	576

Geometrical axis

Cavity state	Equator plane 1 crossing [mm]	Equator plane 9 crossing [mm]	Tilt [μ rad]
Pre-tuned	(-0.325, 0.208)	(-0.02, 0.12)	349
Final tuned	(-0.156, 0.116)	(0.177, 0.033)	367

Electrical axis vs.
geometrical axis

Cavity state	Equator plane 1 crossing [mm]	Equator plane 9 crossing [mm]	Tilt [μ rad]
Pre-tuned	(0.06, 0.03)	(0.201, 0.036)	154
Final tuned	(0.017, 0.008)	(0.215, -0.046)	209

