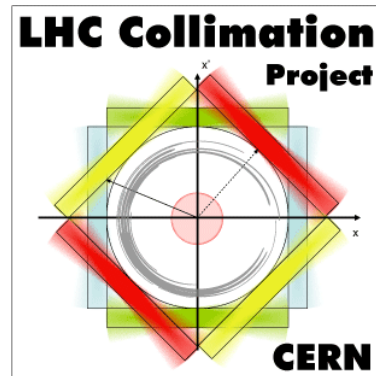


ENERGY DEPOSITION IN THE POINT 7 WARM SECTION AT 3.5 TeV



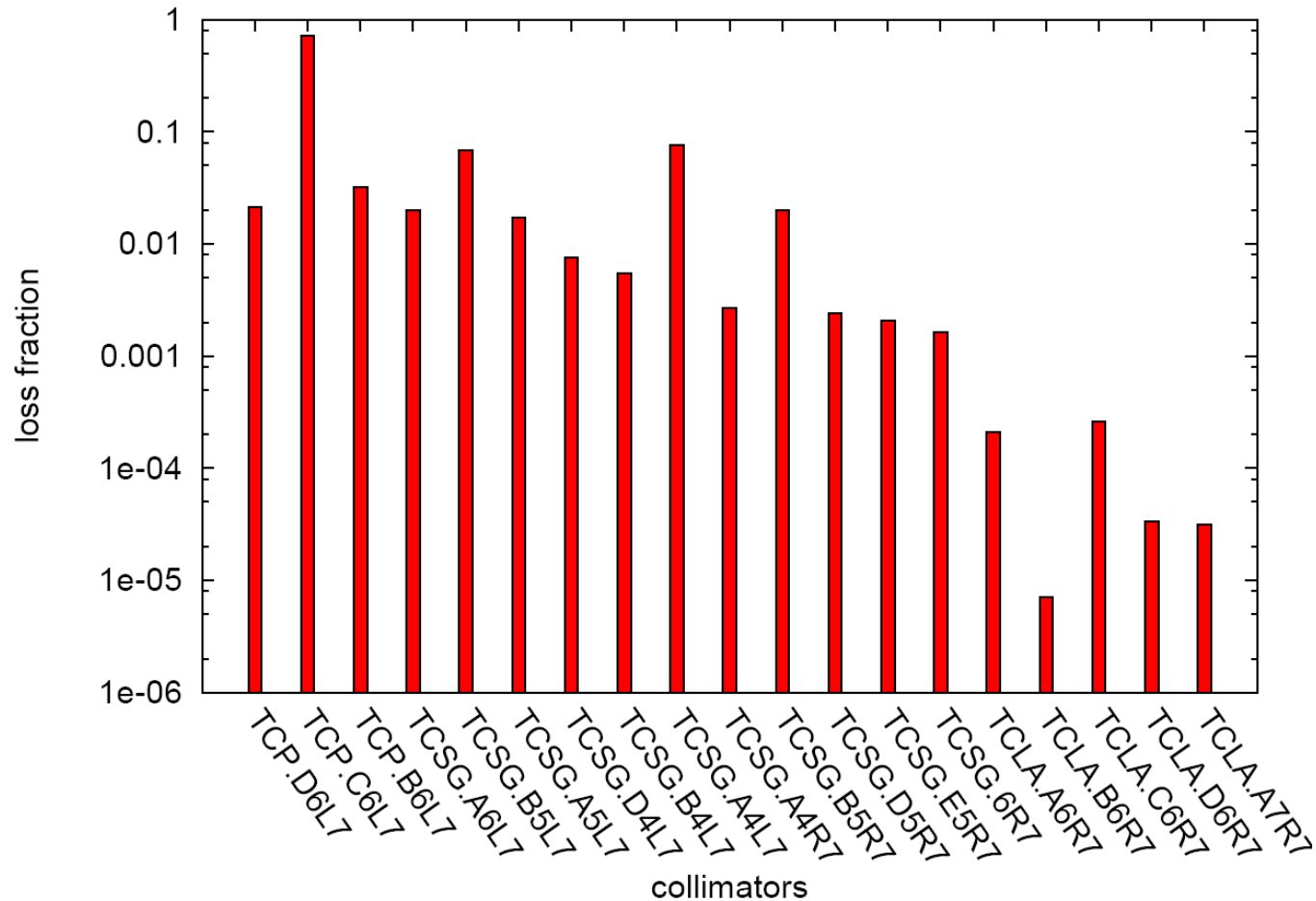
M. Brugger, F. Cerutti, A. Ferrari, L. Lari, E. Lebbos, A. Mereghetti, K. Roed, V. Vlachoudis



LOSS SOURCE

[A. Rossi & C]

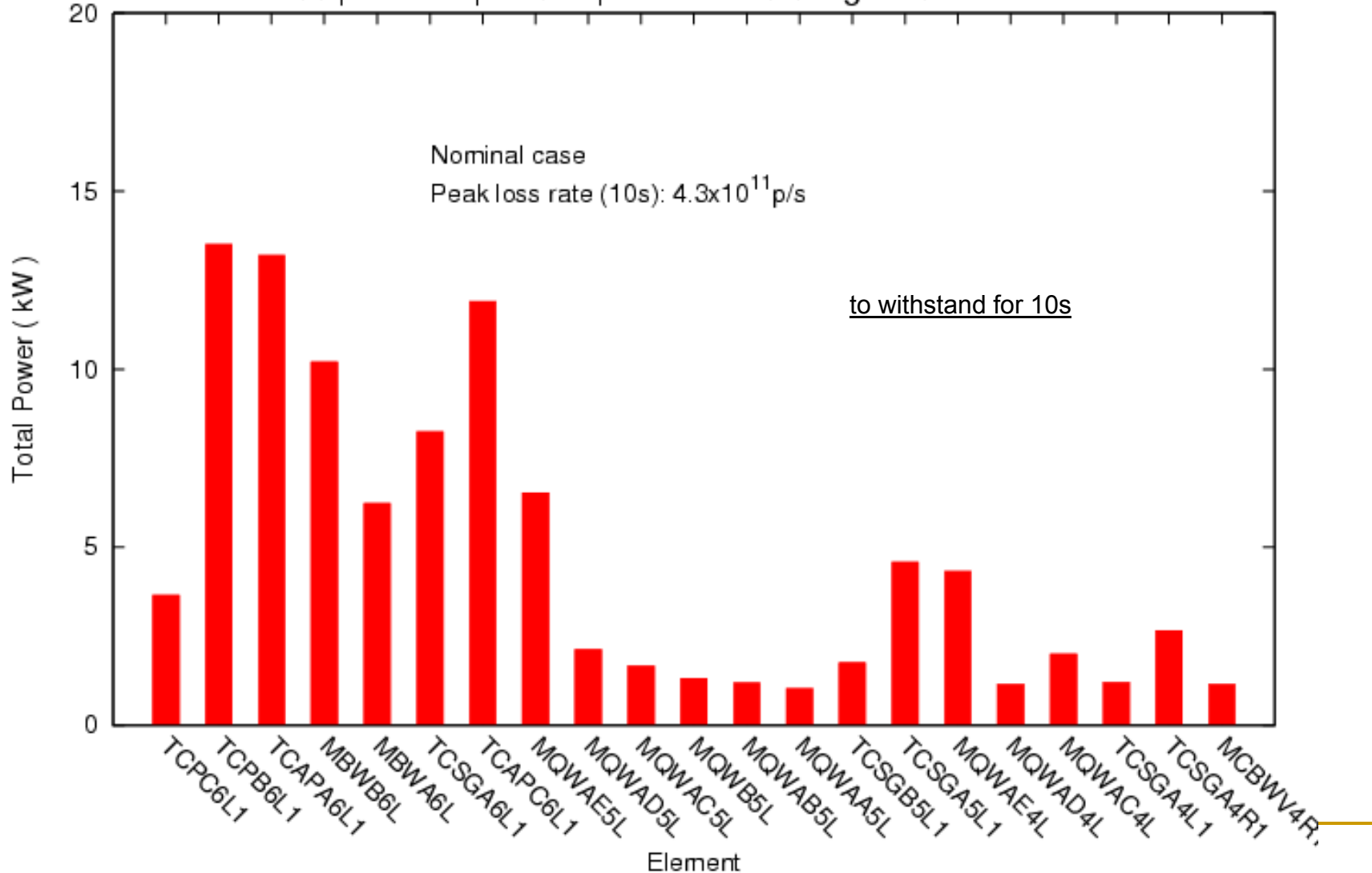
beam 1 horizontal halo



POWER DEPOSITED IN THE STRAIGHT SECTION

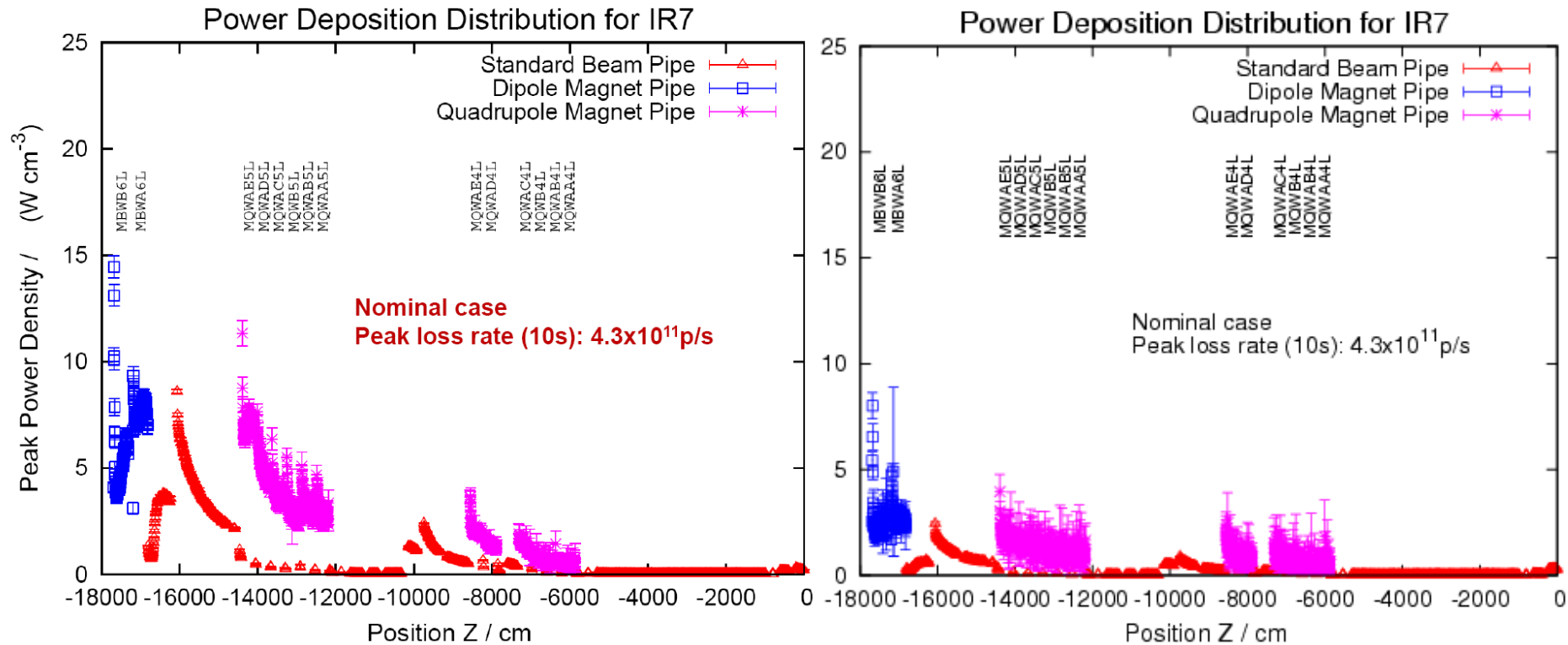
241 KW hitting the beam 1 collimators for 0.2h beam lifetime @ **nominal** intensity (i.e. 2808 bunches with $1.15 \cdot 10^{11}$ p each)

Total power deposition per element along beam line for IR7



BEAM PIPE HEATING

for 0.2h beam lifetime @ nominal intensity



M. Brugger, 96th LCWG meeting, June 16, 2008

7 TeV

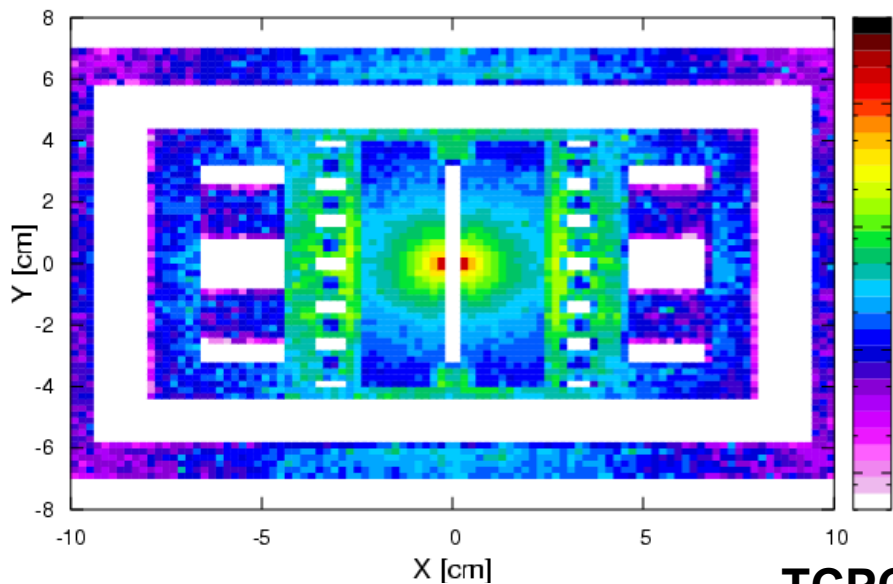
3.5 TeV

peak power longitudinal profile

POWER DENSITY IN THE COLLIMATORS [I]

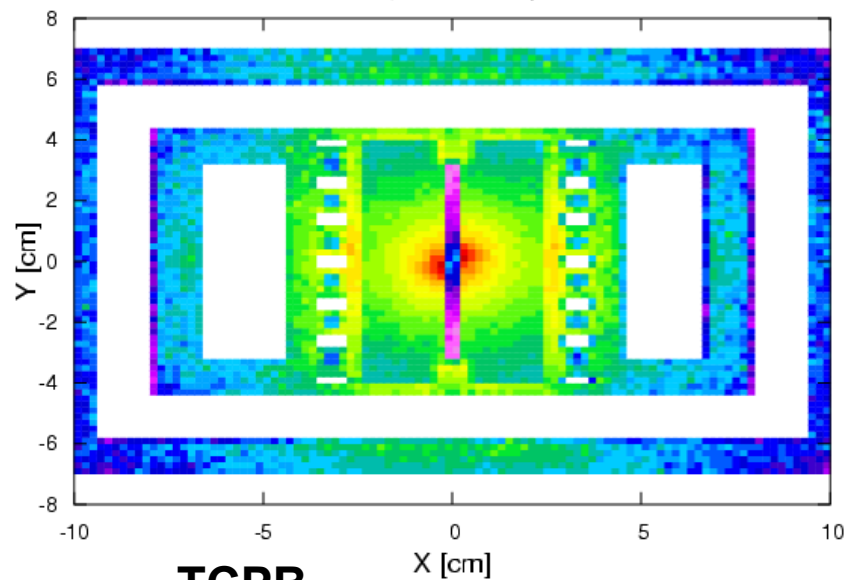
for 0.2h beam lifetime @ **nominal** intensity

TCPB: Power density transverse plane [$29.5 < Z < 31.5$]



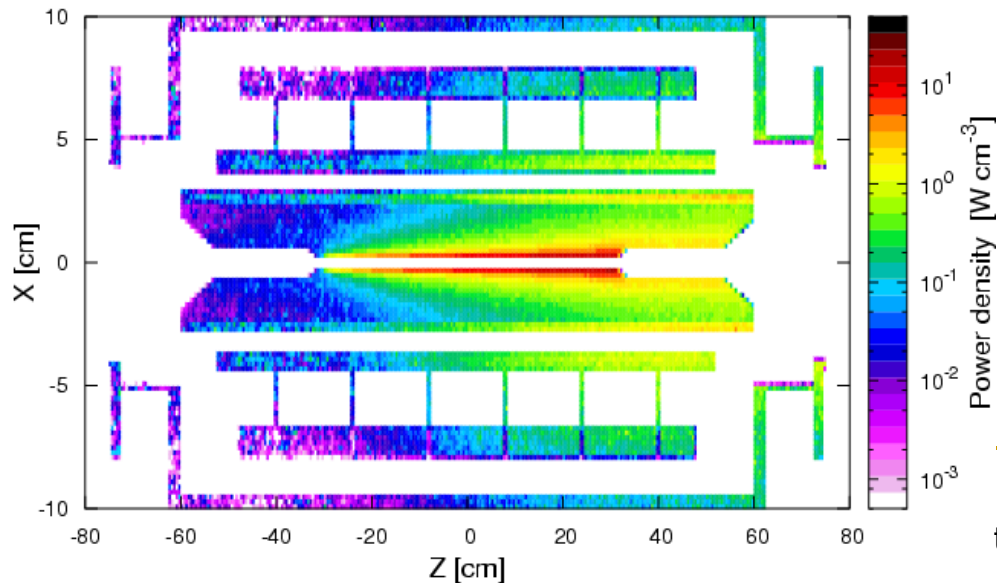
TCPB

TCPB: Power density transverse plane [$28 < Z < 29$]



TCPB

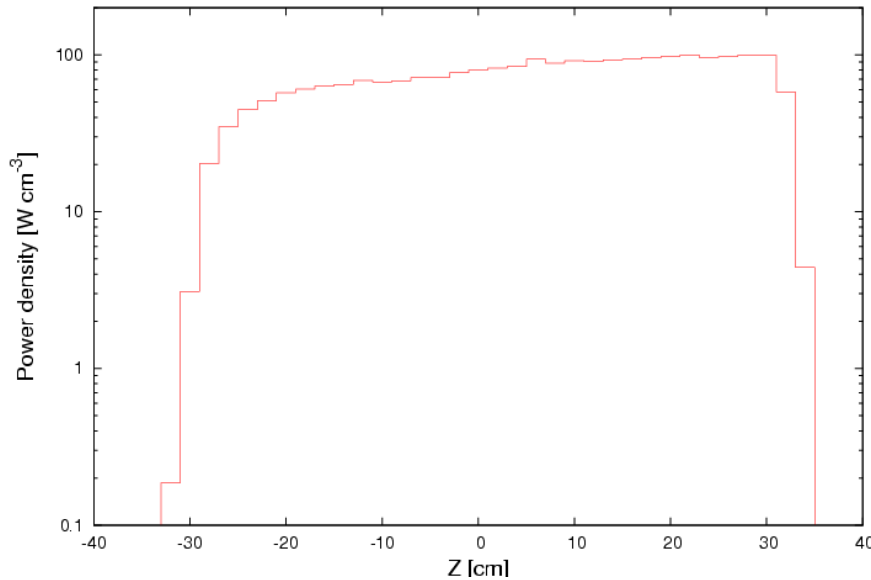
TCPB: Power density horizontal plane [$-0.2 < Y < 0.2$]



2mm x 2mm x 5mm grid

POWER DENSITY IN THE COLLIMATORS [II]

TCPC: Power density (max value) in Jaw horizontal plane



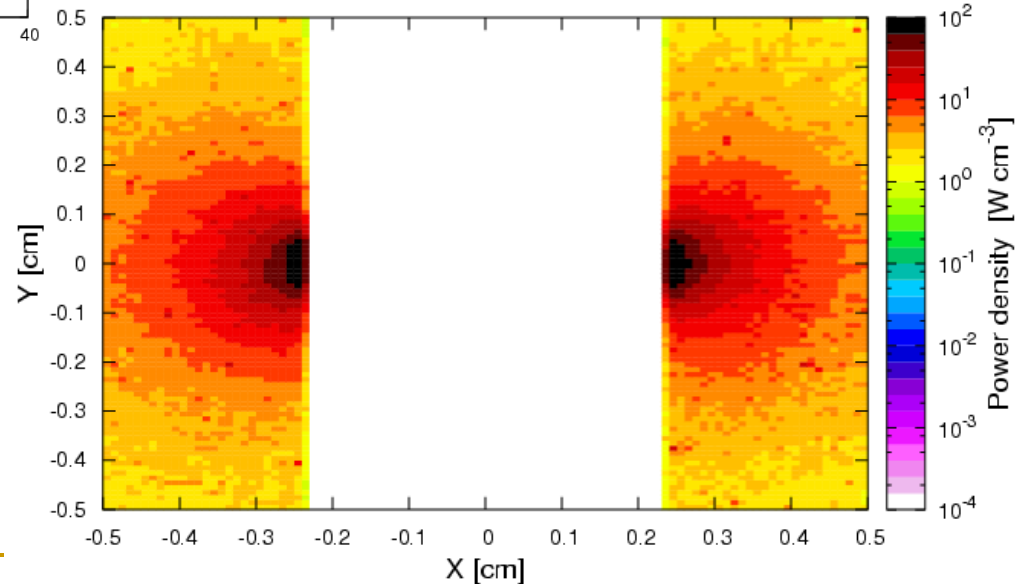
peak in the jaws

for 0.2h beam lifetime @ nominal intensity

TCPC

0.1mm x 0.1mm x 20mm grid

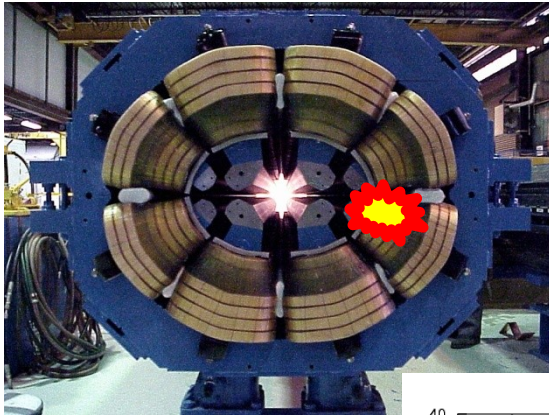
TCPC: Power density transverse plane [28 < Z < 30]



PEAK DOSE IN THE WARM MAGNET COILS

	7 TeV	3.5 TeV
magnet	[MGy]	
MBW.B6L7	3.3	1.7
MQWA.E5L7	0.9	0.3

for $1.15 \cdot 10^{16}$ lost protons

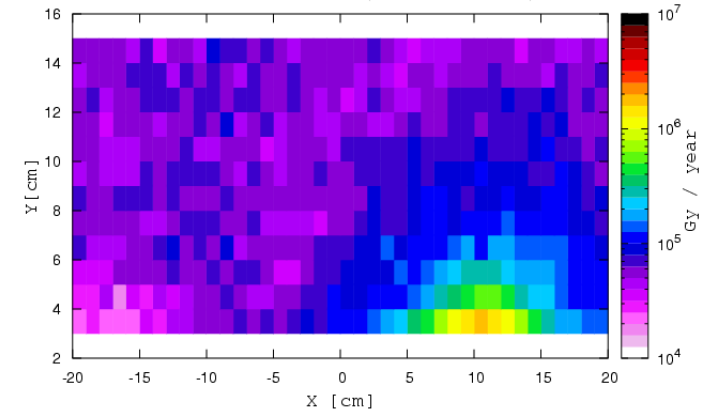
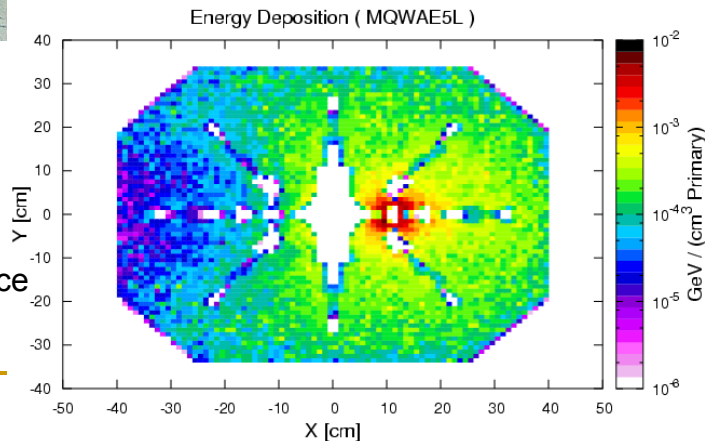


no direct losses considered
only shower from collimators



Peak Dose in coil (MBW.B6L7.B1)

inside the quadrupole
about 20cm from the non-IP face



CONCLUSIONS

- 3.5 TeV operation at nominal intensity represents a more favorable scenario than top energy as for energy deposition in the betatron cleaning warm section (half energy!)

- the (larger) TCLA aperture makes worth evaluating peak power density in the cold section SC magnets (single diffractive!)