Shielding of the Final Focus Quads

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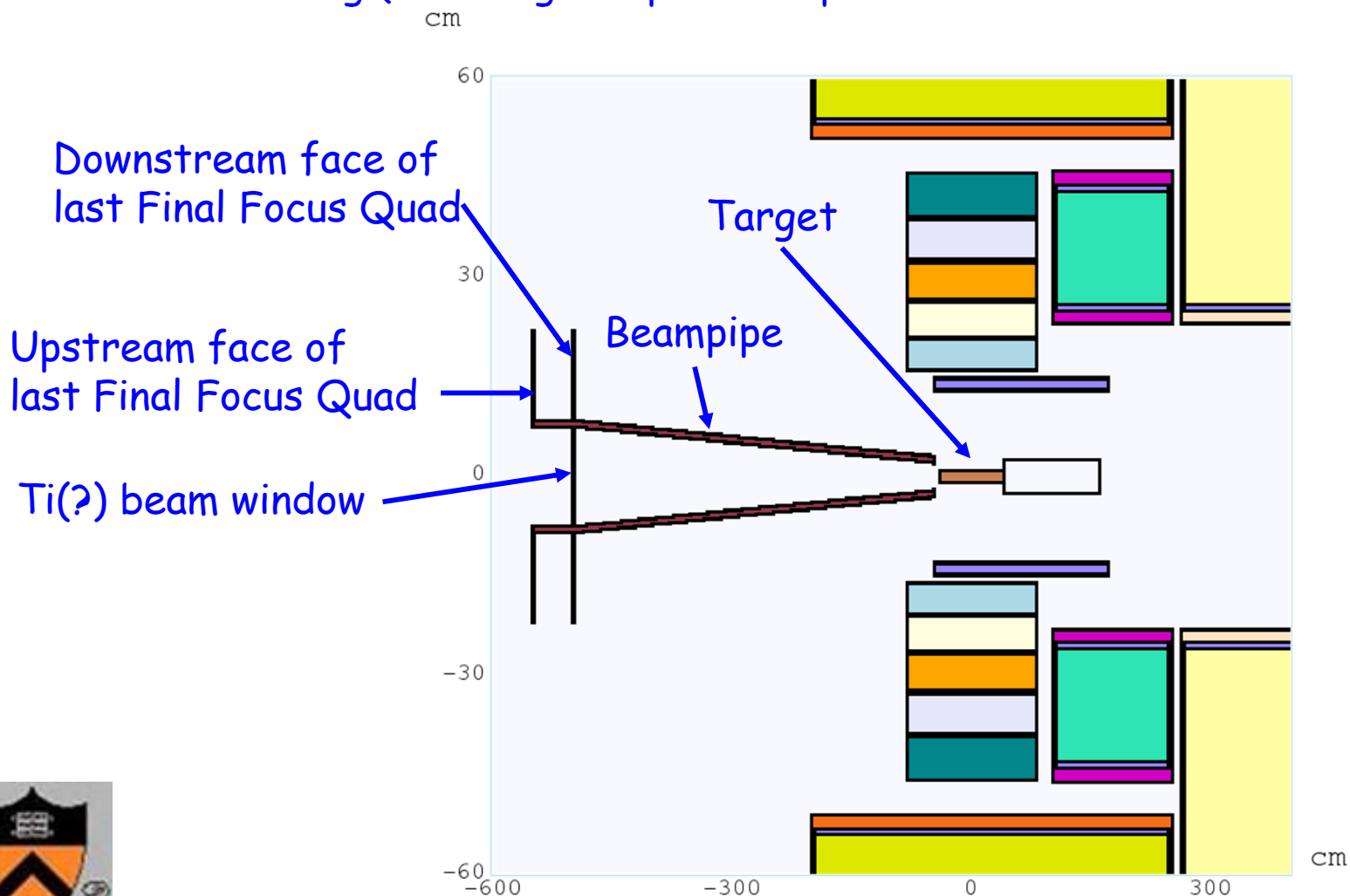*August 1, 2014*

Shielding of the Final Focus Quads (N. Souchlas)

Fringe field of the 20-T Target System solenoid is still 1 T at z = -5 m, the possible location of the last Final-Focus quad, $\Rightarrow$ Use superconducting quads,
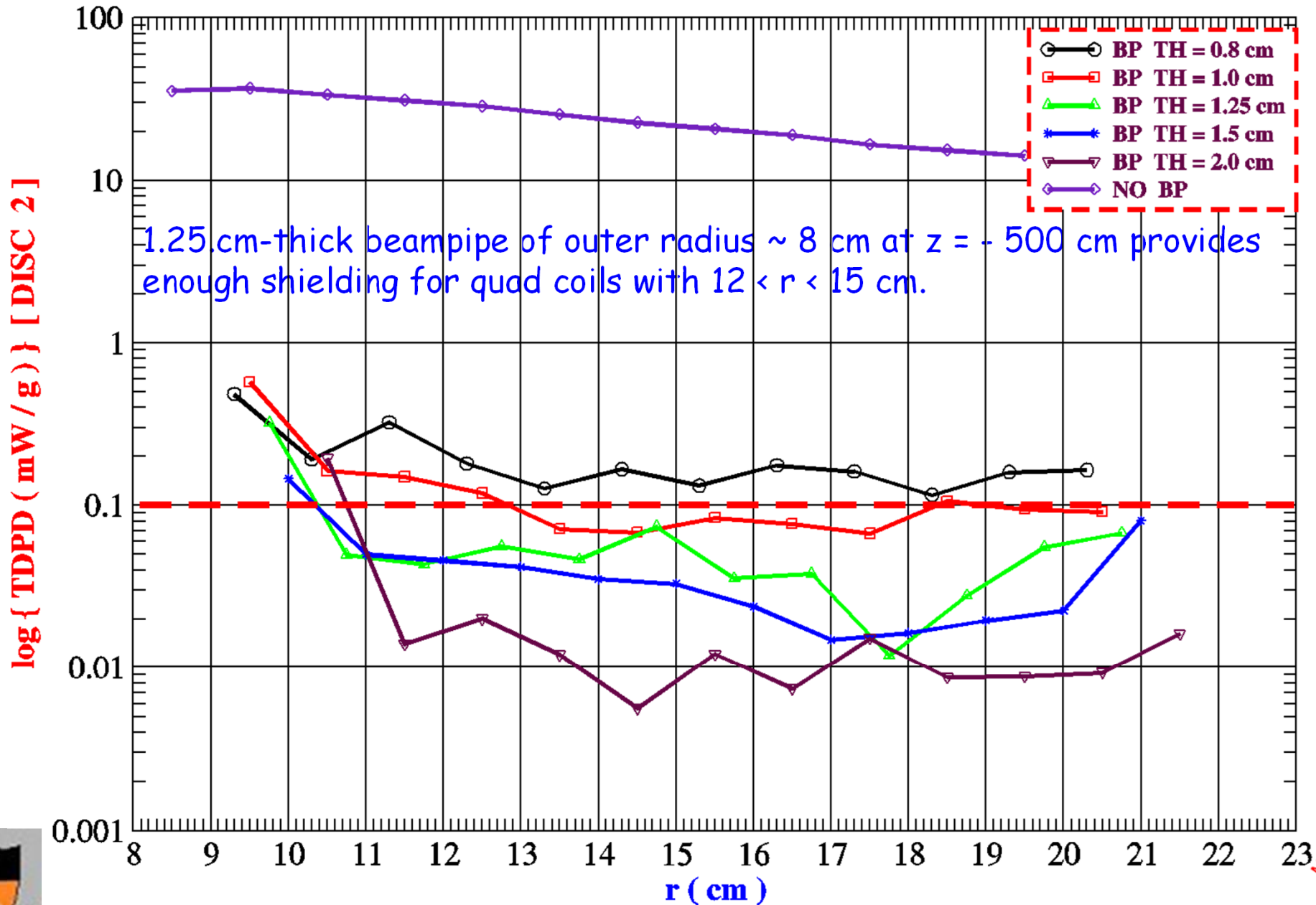
$\Rightarrow$ Must shield against radiation from the target.

MARS15 study (for 0 tilt angle of the beam) indicates that a ~ ½"-thick SS beampipe provides the needed shielding (reducing the power deposition from a 4-MW beam to < 0.1 mW/g,

Upstream End of Quad

1.25 cm-thick beampipe of outer radius ~ 8 cm at z = - 500 cm provides enough shielding for quad coils with 12 < r < 15 cm.

Downstream End of Quad

[NO SH] BP: - 550 < z < - 46 cm, QDSC 2 DISCS (-550, -500) 12 RINGS TDPD vs. r [20to2T5mDL (< 50 cm), 5E6 EVNTS]

[+ 0.2 cm TiWind. z =-500.0 cm] (dr, dz, dphi) = (1.0 cm, 1.0 cm, 360.0) --> (Nr, Nz, Nphi) = (12, 1, 1) # BINS [NO C DUMP]

1.25 cm-thick beampipe of outer radius ~ 8 cm at z = - 500 cm provides enough shielding for quad coils with 12 < r < 15 cm.

Legend:
- BP TH = 0.8 cm
- BP TH = 1.0 cm
- BP TH = 1.25 cm
- BP TH = 1.5 cm
- BP TH = 2.0 cm
- NO BP

y-axis: log { TDPD (mW / g) } [DISC 1]

x-axis: r (cm)