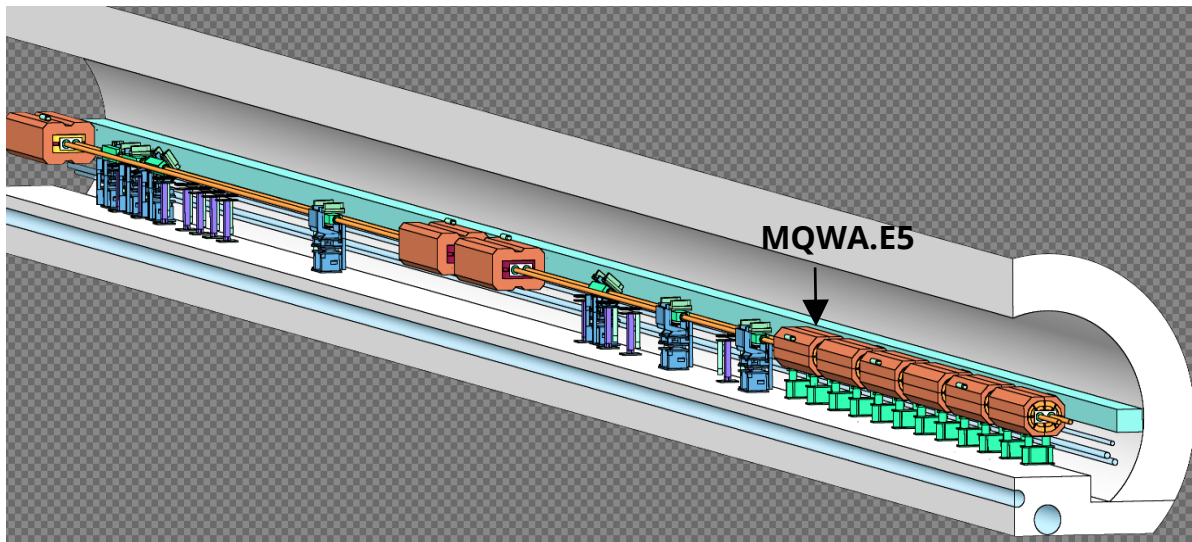




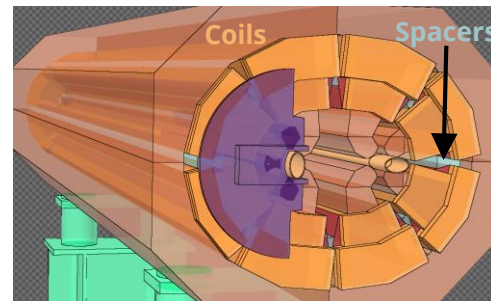
Post LS2 passive protection of the warm magnets of IR7

— C. Bahamonde on behalf of the FLUKA team, thanking the —
contributions of A. Bertarelli, P. Fessia, D. Mirarchi, A. Mereghetti, S. Redaelli

Upgrade plans in IR7 warm section of LSS for LS2

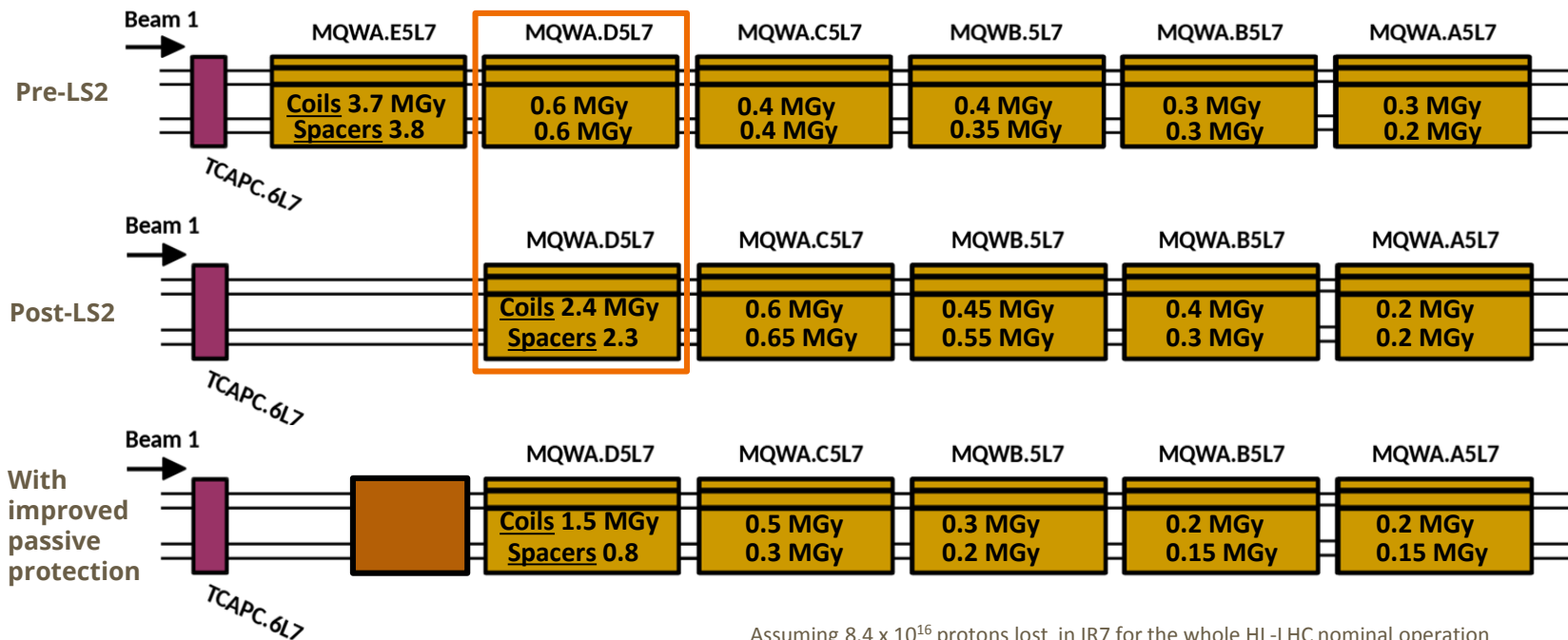


- **MQWA.E5 removed**
(long-term radiation damage)
- **Tungsten mask**
(installed in all magnets from MQWA.D5 to MQWA.A5)



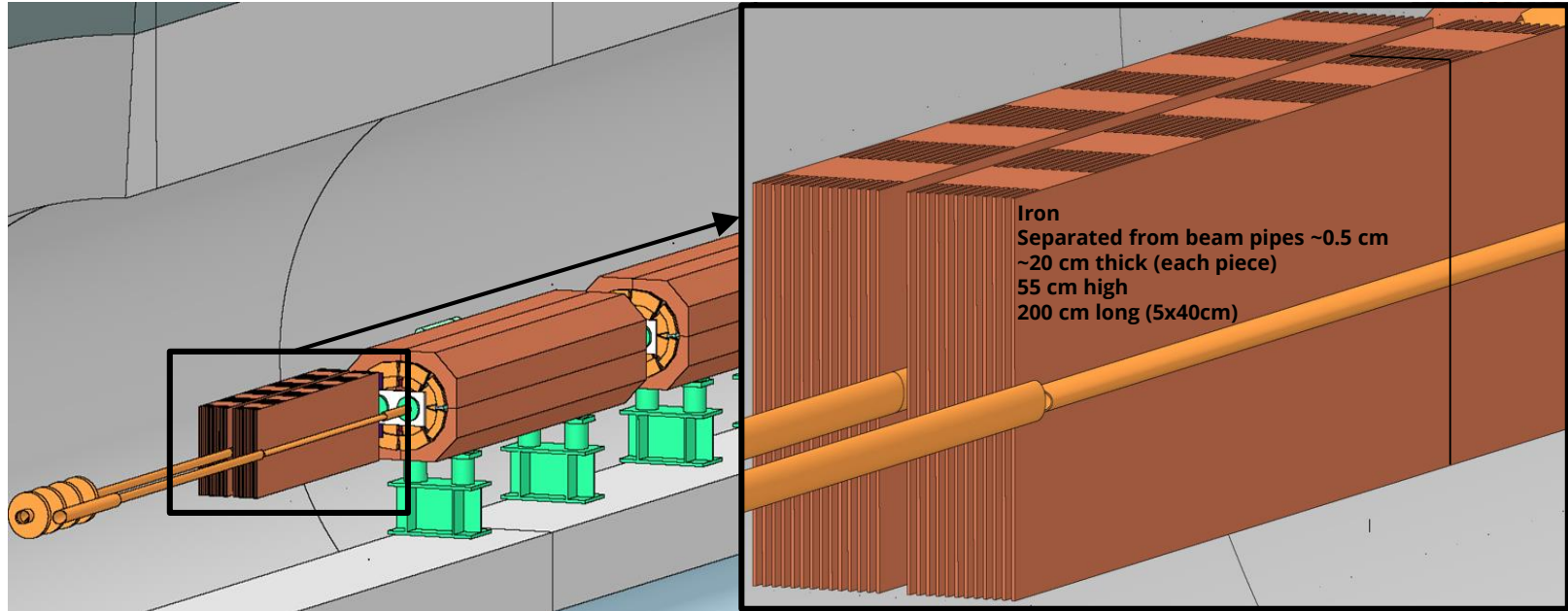
Dose received by downstream MQWs during HL-LHC should remain as if MQWA.E5 stayed in place

Total dose accumulated by the end of HL-LHC

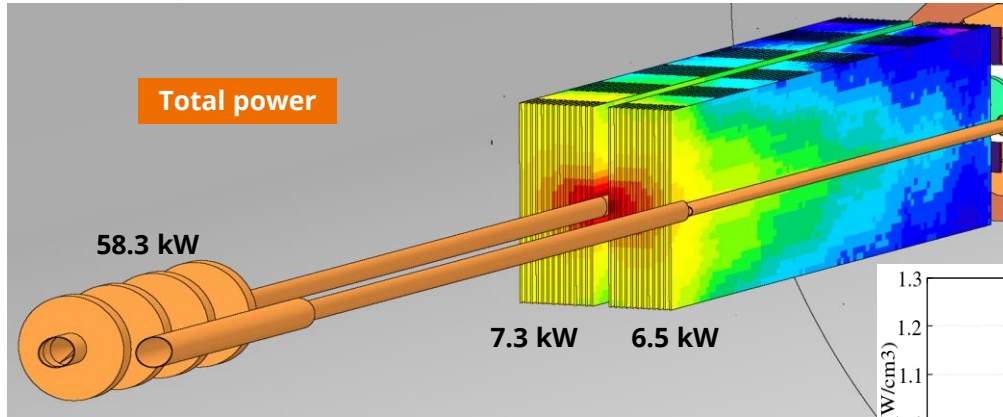


Assuming 8.4×10^{16} protons lost in IR7 for the whole HL-LHC nominal operation

Improved passive protection



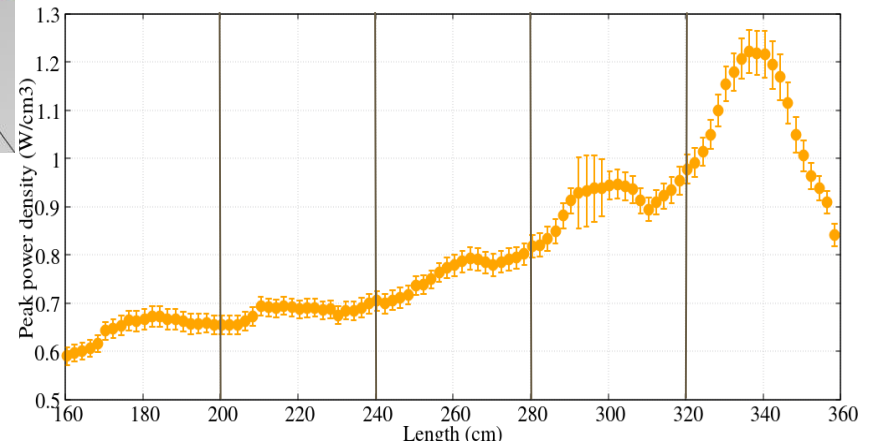
Power loads and peak power density



Assuming 7.9×10^{11} protons lost per second
in IR7 during HL-LHC

(BLT of 12 minutes)

Peak power
1.9 W/cm³ outer piece
1.8 W/cm³ middle piece



Limitations

Dose accumulated by most exposed magnet during all HL-LHC with improved passive protection installed

