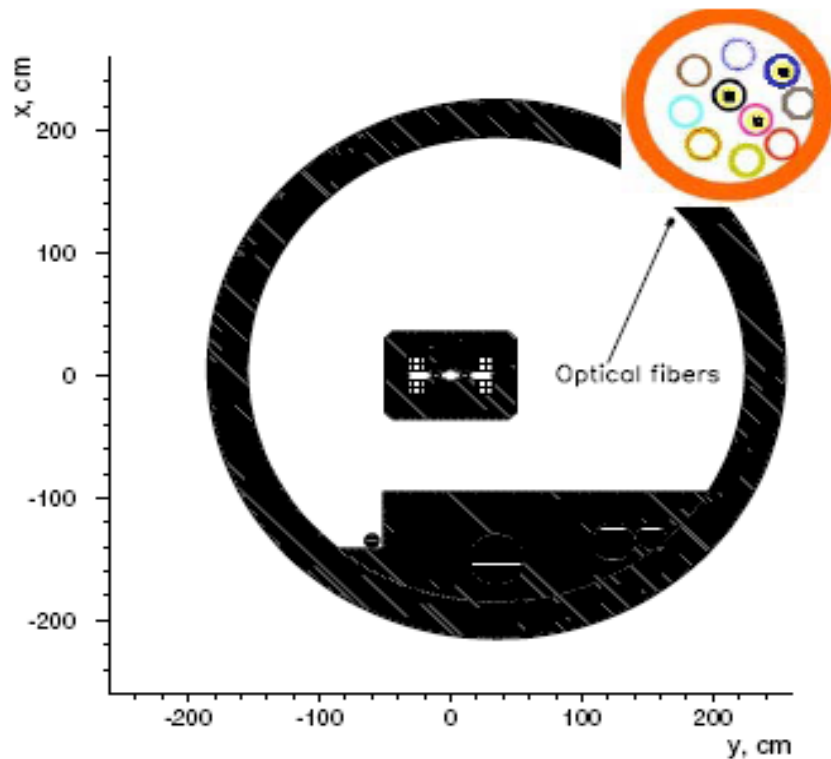
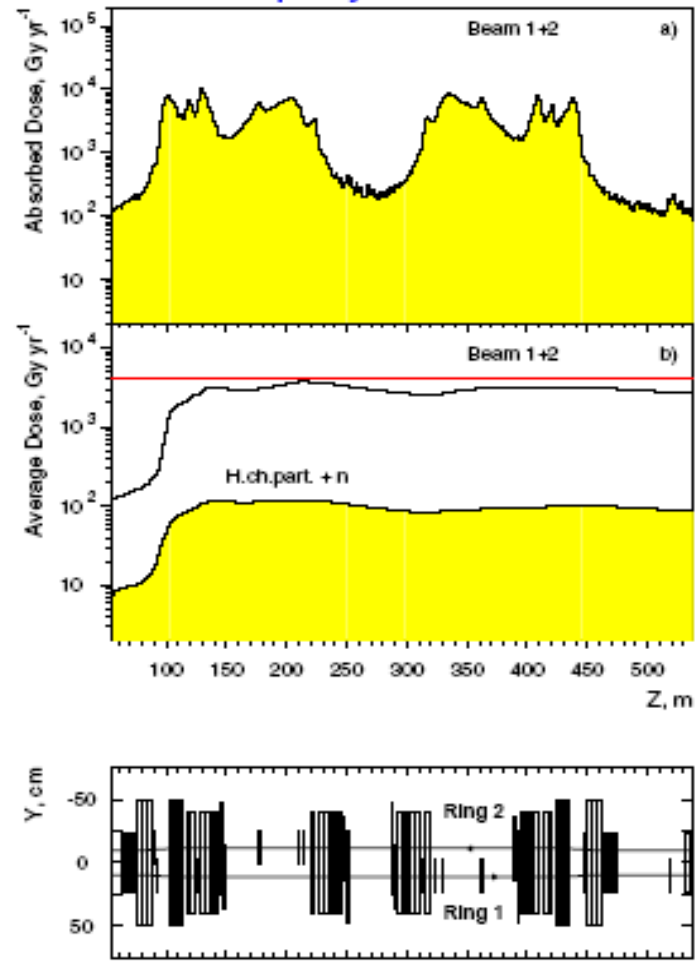


Absorbed dose to Optical fibres IR3

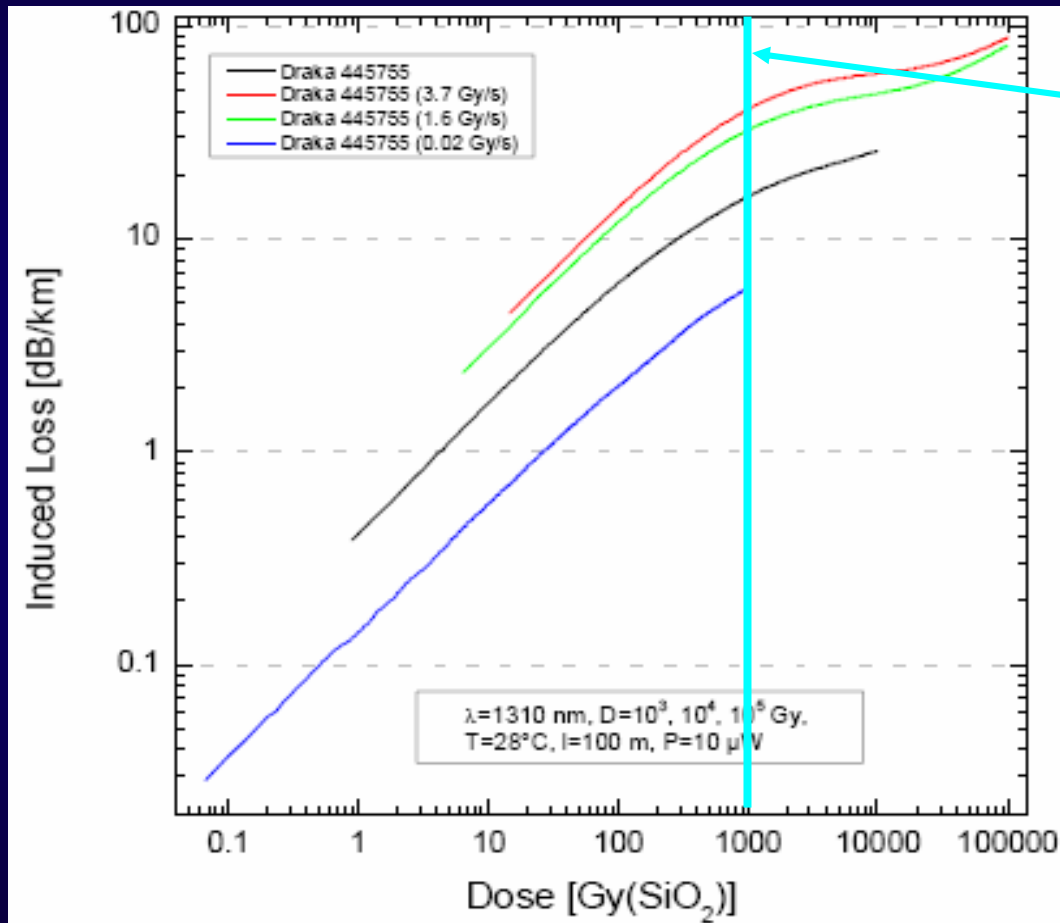
Ø 40 mm duct with 10 x Ø 7 mm tubes,
10 x 24 = 240 optical fibers



Absorbed dose is normalized to $5 \cdot 10^{15}$ inelastic proton interactions per year

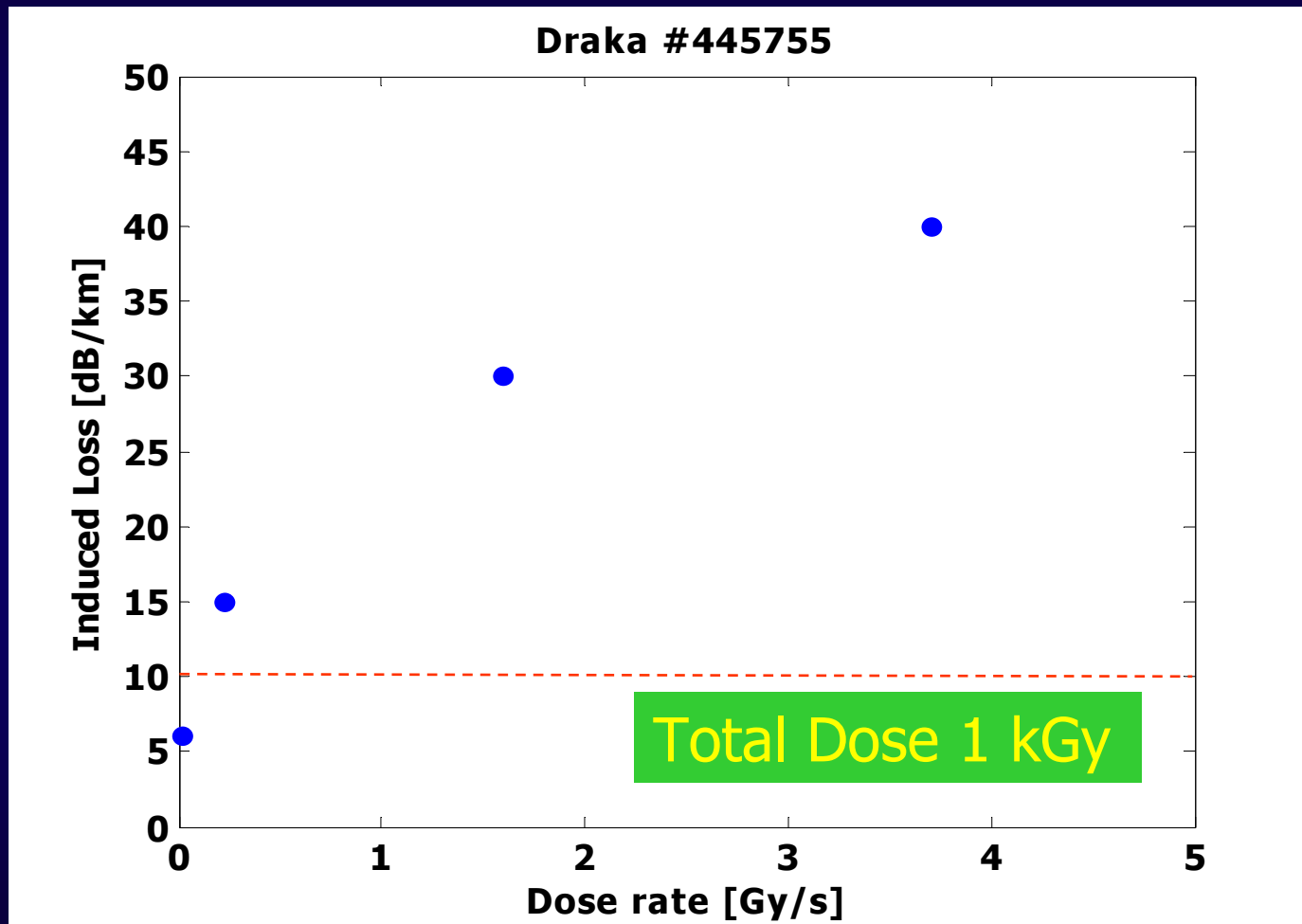


Dose rate dependence DRAKA #445755 - 1

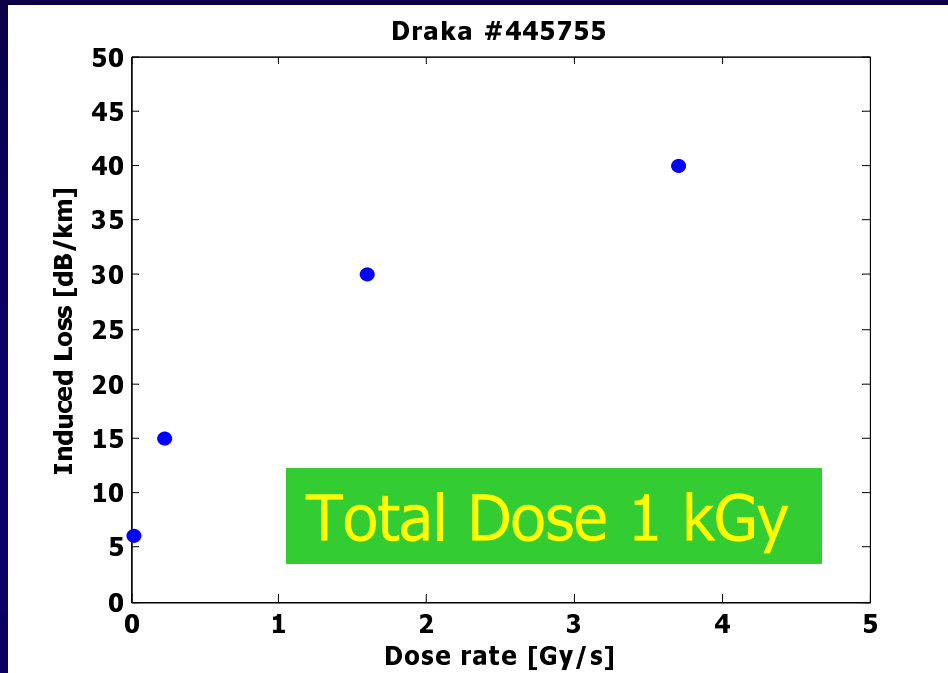


Dose rate dependence at 1 kGy

Dose rate dependence DRAKA #445755 - 2

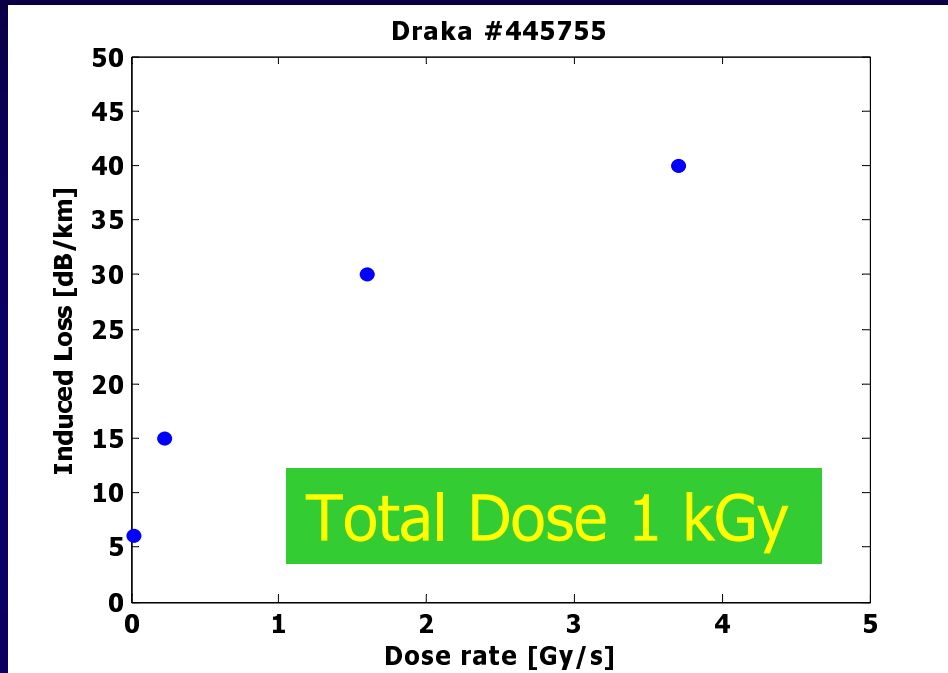


Dose rate dependence DRAKA #445755 - 3



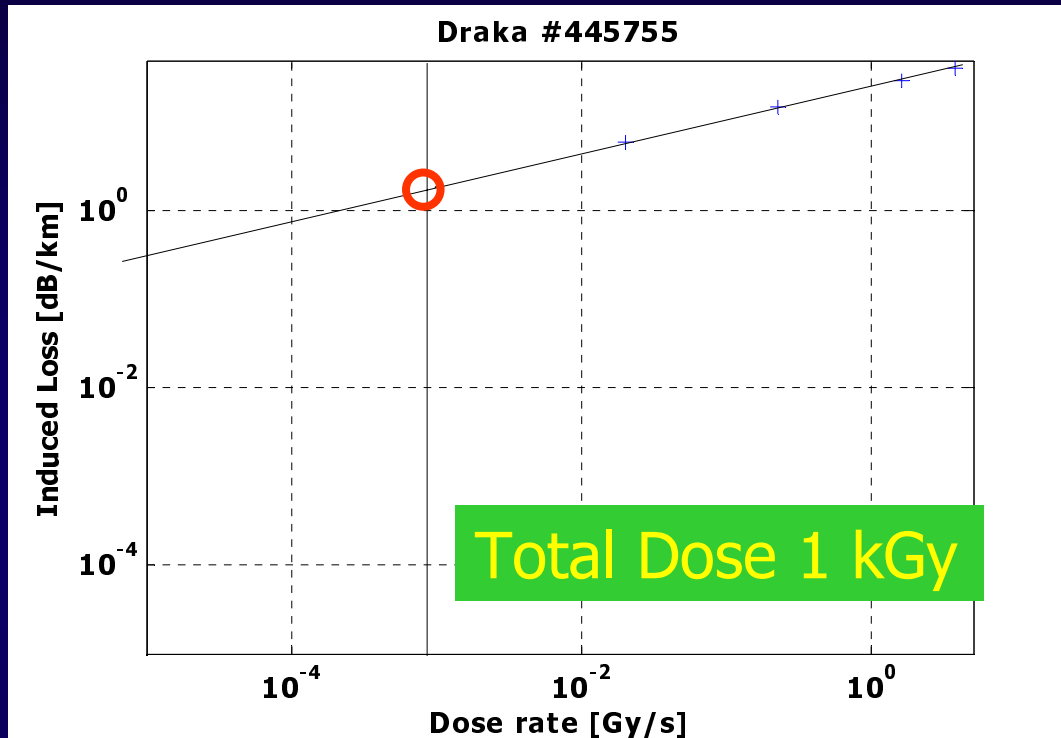
- **LHC IR7**
 - 1 LHC year = 1×10^7 s
 - Averaged annual dose
 - 2.3 kGy (first year)
 - 9.1 kGy (nominal)
 - 14.6 kGy (ultimate)
 - Averaged dose rates
 - 0.23 mGy/s (first year)
 - 0.91 mGy/s (nominal)
 - 1.46 mGy/s (ultimate)

Dose rate dependence DRAKA #445755 - 4



- **LHC IR7**
 - 1 LHC year = 1×10^7 s
 - Peak annual dose
 - 5.8 kGy (first year)
 - 22.8 kGy (nominal)
 - 36.5 kGy (ultimate)
 - Peak dose rates
 - 0.6 mGy/s (first year)
 - 2.3 mGy/s (nominal)
 - 3.7 mGy/s (ultimate)

Dose rate dependence DRAKA #445755 - 5

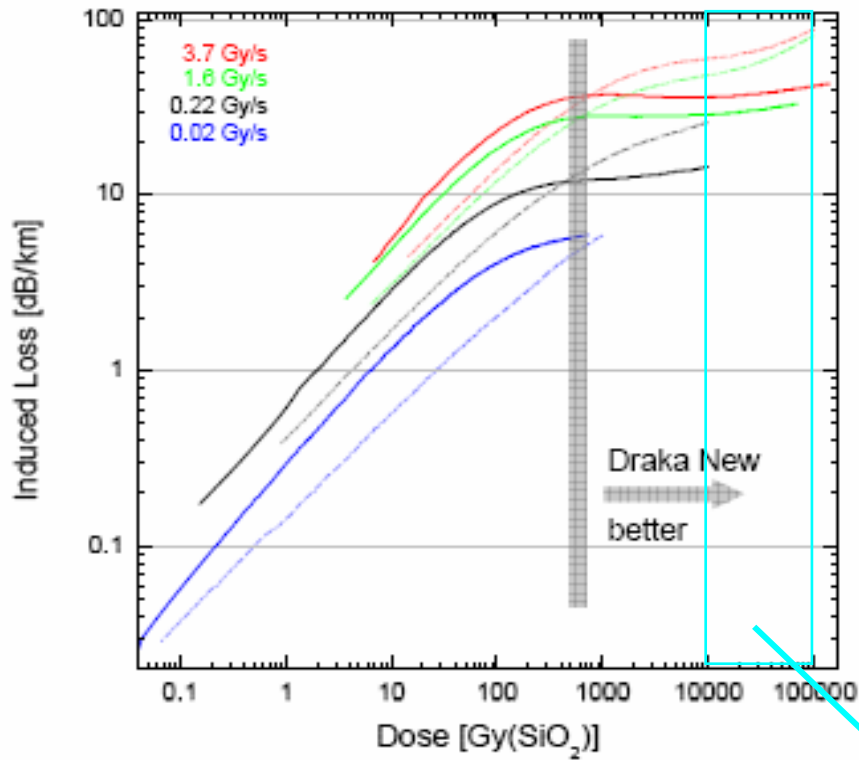


1 kGy at 1 mGy/s gives 2 dB/km

- **LHC**
 - Peak (first year)
 - 5.8 kGy
 - 0.6 mGy/s
 - Average (first year)
 - 2.3 kGy
 - 0.23 mGy/s
- **RIA < 10 dB/km**
 - **peak :**
 - ok for 1-2 years
 - **average :**
 - ok for 2-3 years

Draka new vs Fujikura

➤ Draka New



➤ Fujikura

