18.08.04 BD

Attenuation in fires due to radition damage

Tunnel Area	Distance [m]	Dose rate [Gy/h]	Total Annual Dose [Gy]	Attenuation [dB/y] 1310 nm Ge-P doped fibre	Attenuation [dB/y] 1310 nm Ge doped fibre
LSS R7	270	0.625	3000	64.8	8.1
DS R7	170	0.002	10	0.14	0.02
Half ARC	1214	0.001	5	0.49	0.06
Total	1654	-	3015	65.4	8.1

Table III. Estimates of the annual radiation induced attenuation in an optical fibre around IR7 based on the fitting parameters in section 4.

Radiation damage to doped Si Fibres in the LHC tunnel

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=> 10.0 /dB/km/kGy

Older radiation damage numers
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2.0 dB/km/500 Gy => 4.0 /dB/km/kGy
3.4 dB/km/400 Gy => 8.5 /dB/km/kGy
1.9 dB/km/155 Gy => 12.0 /dB/km/kGy