

Status of radiation study in a SB Target.

Plan

- Dose Equivalent Rate Simulation
- Safety items

Beam Features:

- Proton Energy : 400 GeV/c
- Intensity : $8.0 \cdot 10^{12}$ pps
- Irradiation time : 200 days

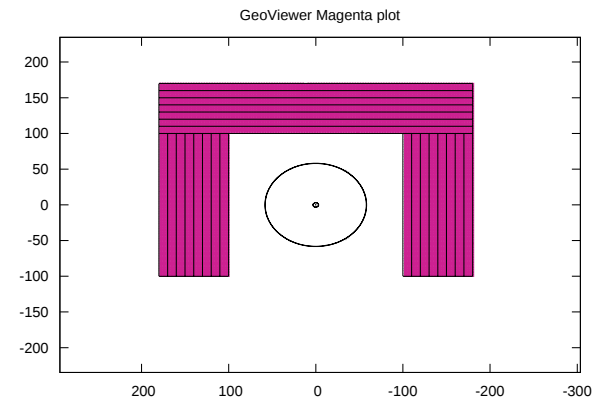
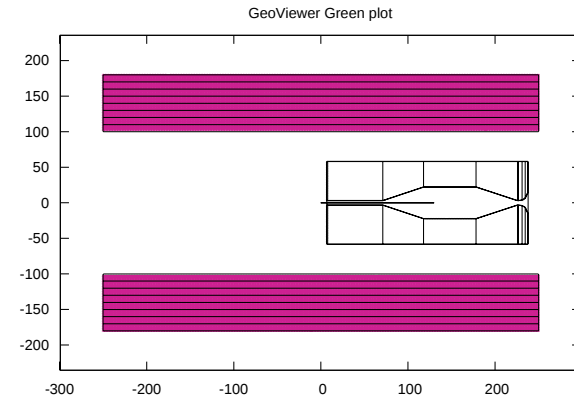
Target (CNGS like):

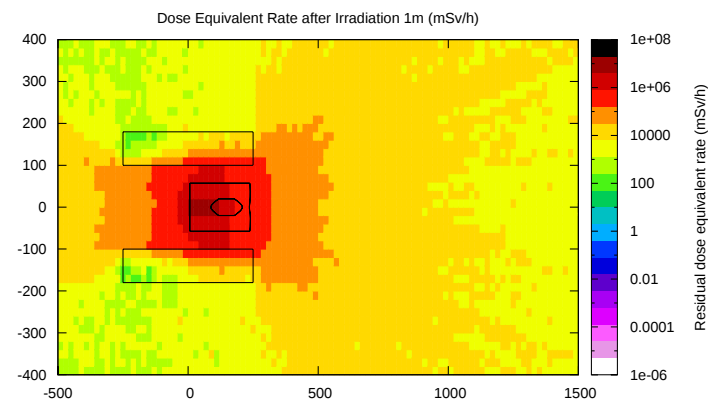
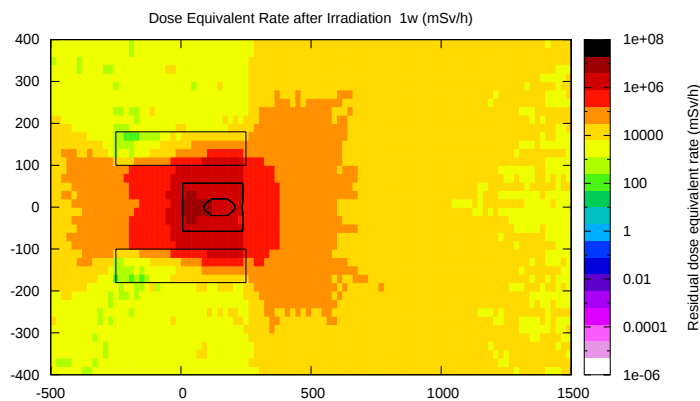
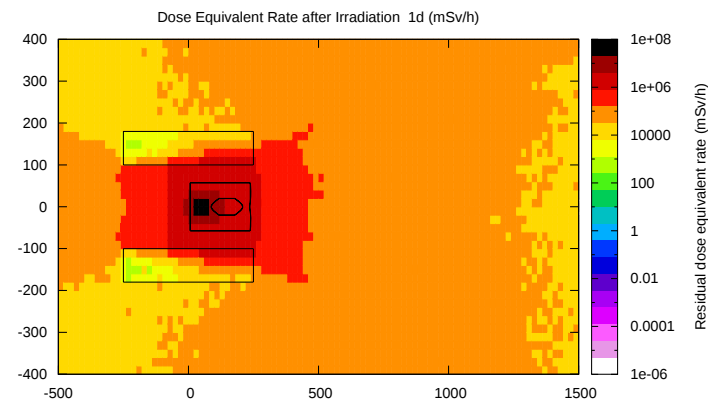
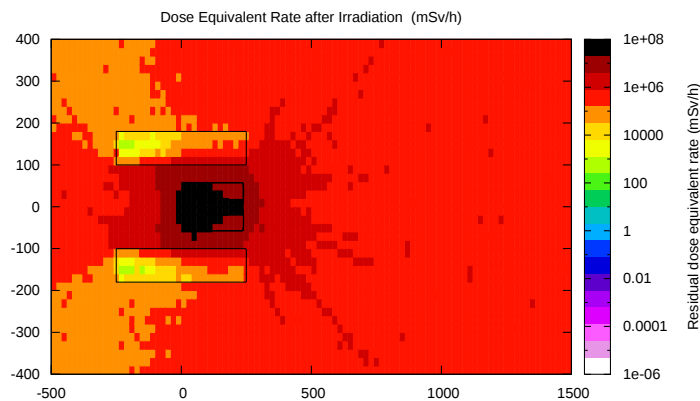
- Material : Graphite
- Cylinder : 130 cm x 4mm (Diameter)

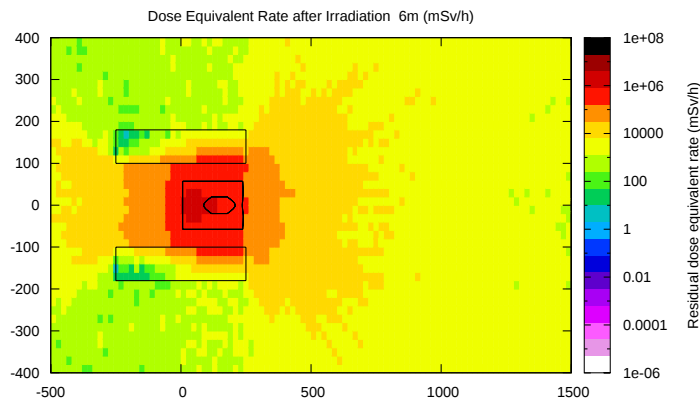
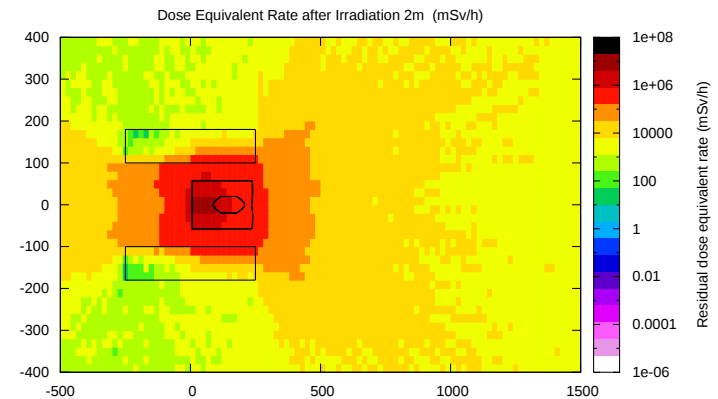
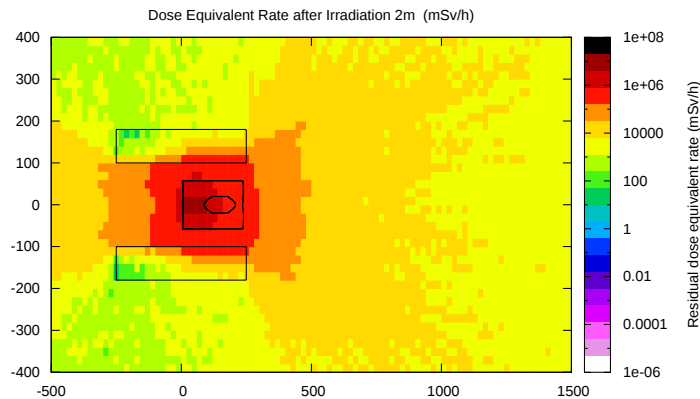
Shielding for the Target Station :

- Walls and roof: 80 cm of Iron,
8 Slabs (one 2.5mx2mx10cm)

=> Evolution of the DER with time







- High DER compared with CNGS but attenuation seems correct.
- Need more statistics

- **ALARA approach :**

⇒ **Anticipate and reduce individual and collective exposition to radiation**

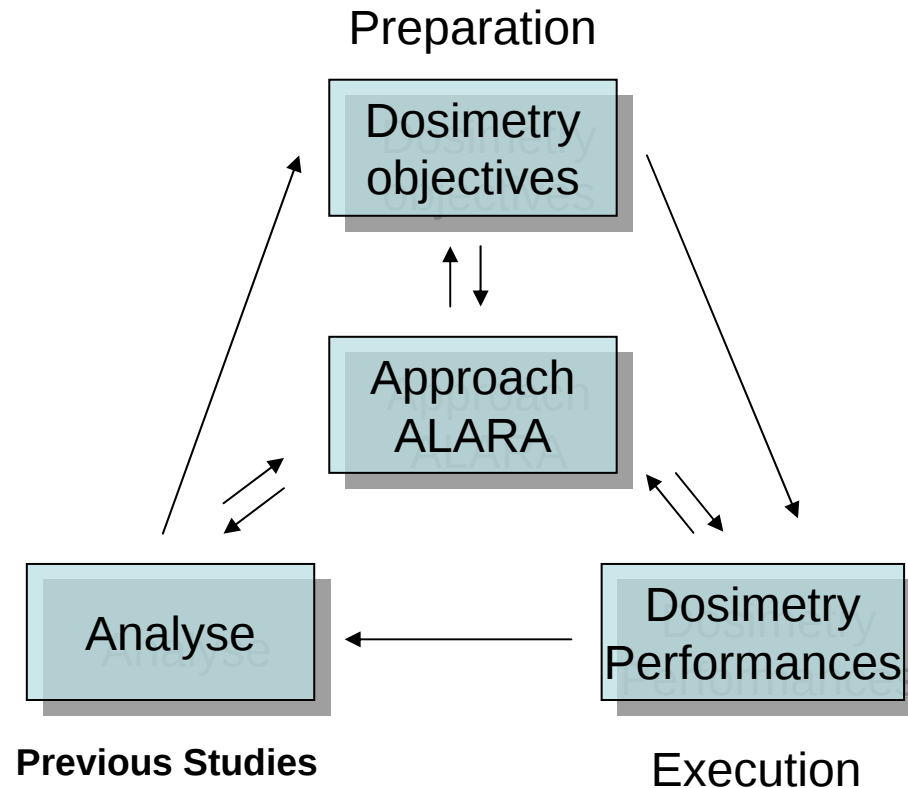
- **Iterative processes :**

- **Préparation**

- Building Structure lists of materials
- Dose Equivalent Rate Estimation
- Optimize procedure during operation and maintenance phases
- Evaluate residual activity of wastes

- **Execution**

- Safety Analyse from previous facilities (WANF, CNGS, NuMi, J-PARC...)



As Low As Reasonably Achievable

- Experimental Hall
 - MW Target Station
 - Decay Tunnel
 - Beam Dump
- Service Gallery
- Maintenance Room
- Waste Area
- ...

- **MW Target Station**
 - Shielding Material (Iron, Concrete, Marble)
 - Crane system to install/remove blocks
 - Automated Robot
 - Mechanical Structure for the 4 horns
 - (Material with low Cobalt impurities...)
 - Dose Rate Monitoring System
 - Residual Dose Rate Measurement (Detection Platform CNGS)
 - Helium Atmosphere => Flushing with Air => filters to measure radioactive pollution (Dust, Tritium...)
 - Confined Environment in case of tritium leaks
 - Condensate system / Dehumidification system
 - Investigation of other radionuclide transport (Na-22)
 - ...