

## Notes from the AMBER Drell-Yan RP meeting on 28/01/2022

<https://indico.cern.ch/event/1107557/>

Present: C. Ahdida, D. Banerjee, D. Brethoux, A. Devienne, A. Gerbershagen, S. Girod, M. Lazzaroni, F. Malacrida, F. Metzger, C. Quintas, M. Van Dijk

- F. Metzger [presented](#) the calculation of transmission along the M2 beam line
  - The simulation is performed with BDSIM with realistic magnet geometries
  - 15-20% of particles are lost between COLL5 and CEDAR and additional 5% of intensity are lost between CEDAR and AMBER target
  - This is compatible with the FLUKA simulation results presented by A. Devienne in the previous meeting. The somewhat higher values are due to the realistic beam distribution.
  
- A. Devienne [presented](#) the update of the shielding study in FLUKA
  - The objective of study is to design the new shielding at strategic locations in EHN2 to be compatible with the beam intensity increase requested by AMBER.
  - An additional block has been added to the access chicane close to the CEDAR region of M2.
  - The most recent proposal for AMBER target bunker is named RP2 and it serves two purposes: to lower the prompt radiation outside EHN2 due to sky-shine outside EHN2 and to reduce the residual dose rate contribution of the AMBER target activation.
  - The new version of auxiliary files in FLUKA (V65) has the magnetic fields correctly implemented, in particular for QWL magnets.
  - Compared with the previous version, the losses occur to a larger share in the target region and the beam is well centred on the target.
  - In current version the losses from COLL5 to target are only 8.5%, of which <1% are between CEDAR and the target.
  - Soil material has been included into the simulation, which covers the analysis of RP issues due to high-energy muons propagating along the beam direction.
  - The skyshine contribution comes almost completely from the target. All values at reference points locations are below the legal requirement of 1mSv/year at CERN fence, with the highest one being around 500 microSv/year.
  - Air activation is within the radiation area classification limits.
  - Air release to environment has been calculated and is being reviewed.
  
- F. Metzger [presented](#) the results on the new beam optics
  - The optics as aimed at minimizing the beam divergence in CEDAR to ease the particle identification.
  - The minimization is achieved via new parallel beam optics at CEDAR location and via the collimation of the beam in X and Y planes upstream of CEDAR
  - The collimation helps to notably reduce divergence in X plane, but only minimally in Y plane.
  - The particle background to the experiment is assumed not to increase, due to the collimation being far upstream of the experiment.

Next steps:

- A. Devienne will bring the [ECR draft](#) up-to-date with the newest version of the simulations
- [ECR draft](#) will be forwarded by A. Devienne to the integration team in order for them to write the contribution on the integration.

The next meeting will be scheduled for the 9<sup>th</sup> of February at 9am.

A. Gerbershagen, 28/01/2022