BIB studies (IV)
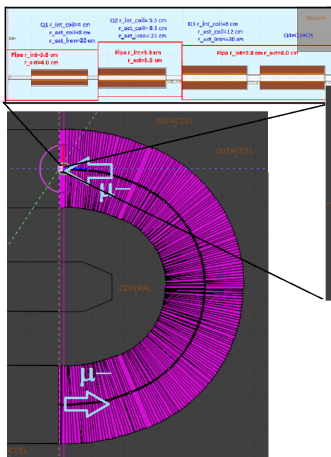
Camilla Curatolo*, Paola Sala, Francesco Collamati,
Alessio Mereghetti, Donatella Lucchesi
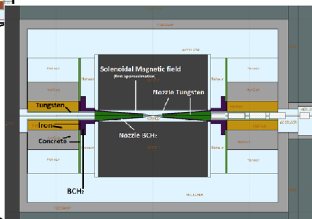
*Università e INFN Padova, Italy

camilla.curatolo@pd.infn.it

February 16, 2021

- Analysis of BIB obtained by μ^- beam of 2×10^{12} particles: comparison between our and MAP results @1.5 TeV CM energy
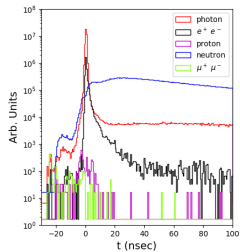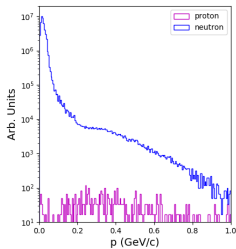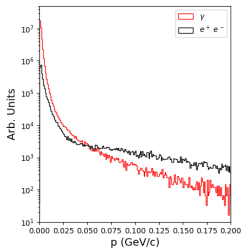
- MAP data simulated by MARS15

- Our framework:

Simulations:
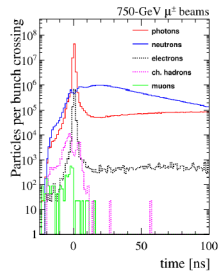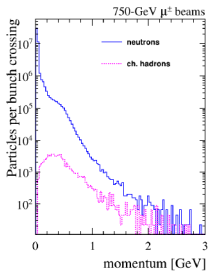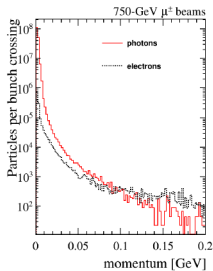**FlukaLineBuilder +Fluka**

750 GeV muon beam from opposite IP bias of muon decay in last 100 m to enhance statistics

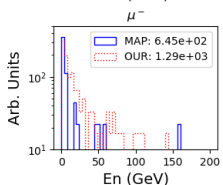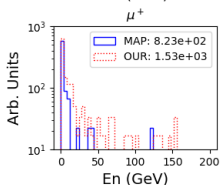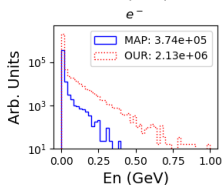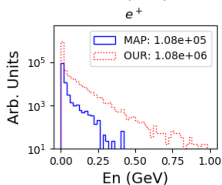- In the following graphs: time cut at 300 ns

Our results
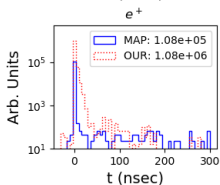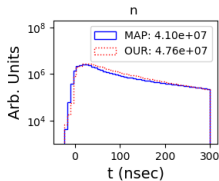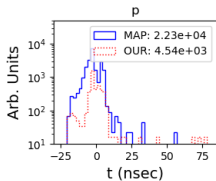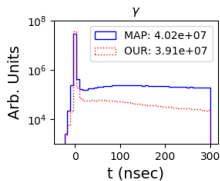

MAP results

Energy distributions
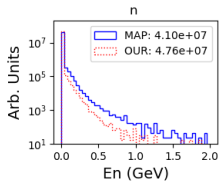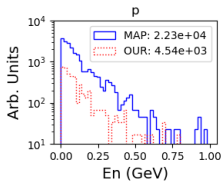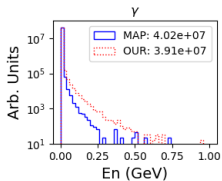
COMPARISON

Time distributions
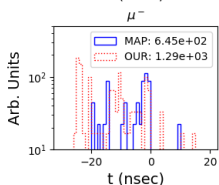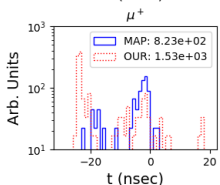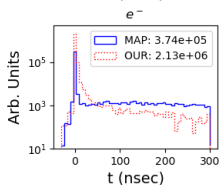
Time vs energy
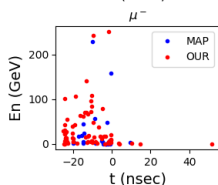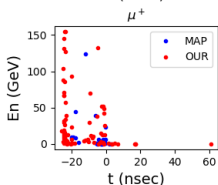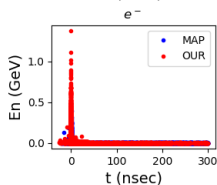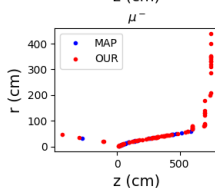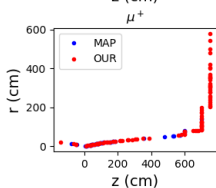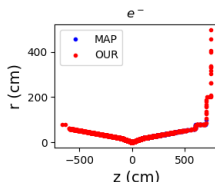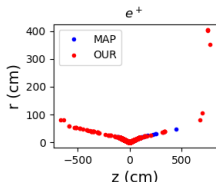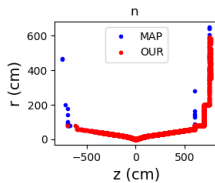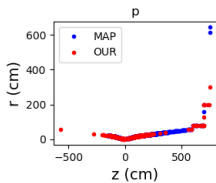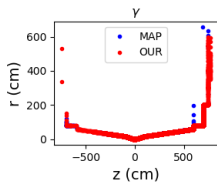
z vs radius

z vs radius
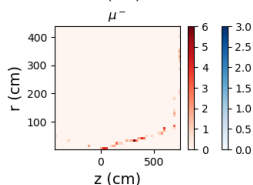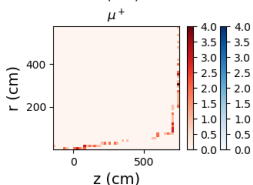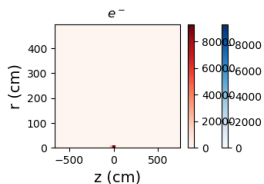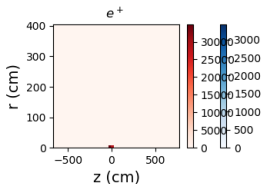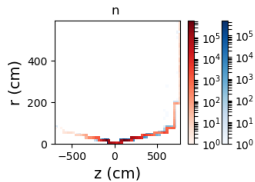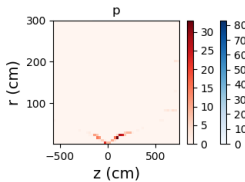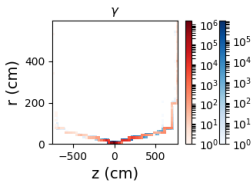
- Good agreement of our results obtained by LineBuilder+FLUKA and MAP results by means of MARS15
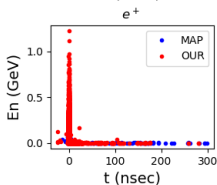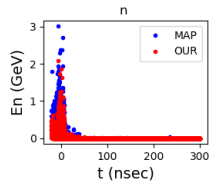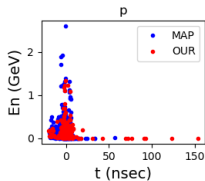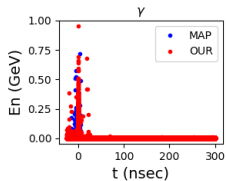
- Some more cosiderations regarding our results and a possible further optimization: analysis of position of particles exit and first interaction
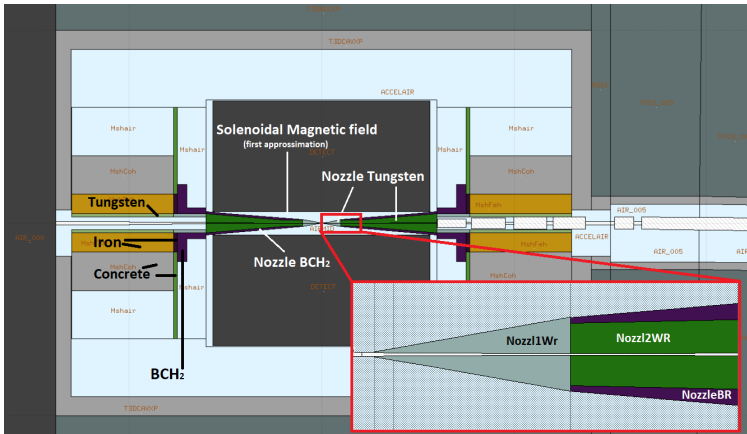
OUR RESULTS

Part of the machine where the first interaction occurs after the muon dacay
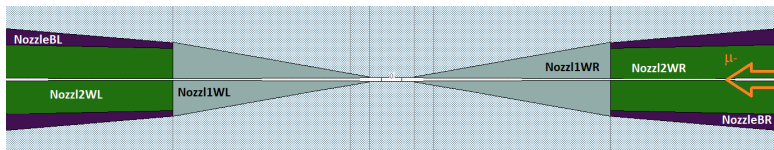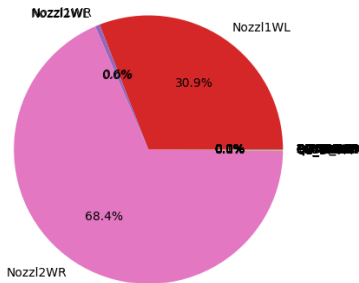
Distance of muon dacay against part of the machine where the first interaction occurs divided by kind of particle entering the detector

z vs first interaction

Part of the machine where the particles exit (entering the detector)

Distance with respect to IP of muon dacay against part of the machine where the particles exit divided by kind of particle entering the detector
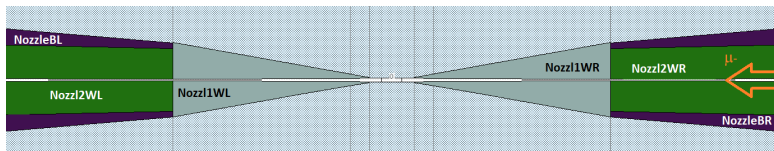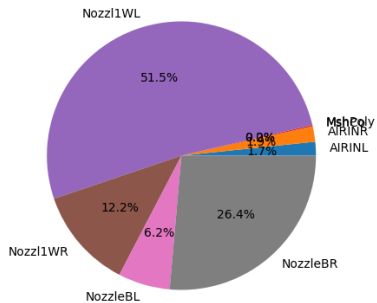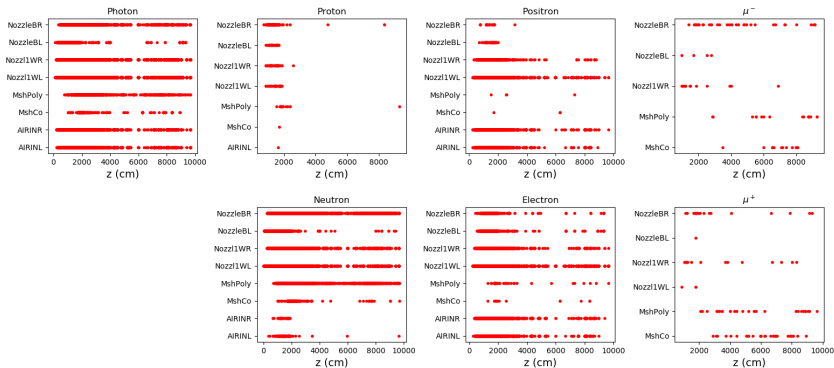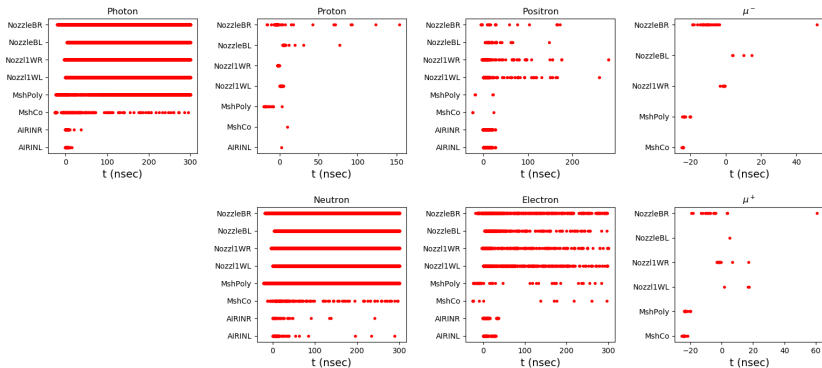

z vs exit region

Time of particle entering the detector with respect to bunch crossing against part of the machine where the particles exit divided by kind of particle entering the detector

time vs exit region

Histogram of the distance with respect to IP of muon dacay divided by kind of particle entering the detector