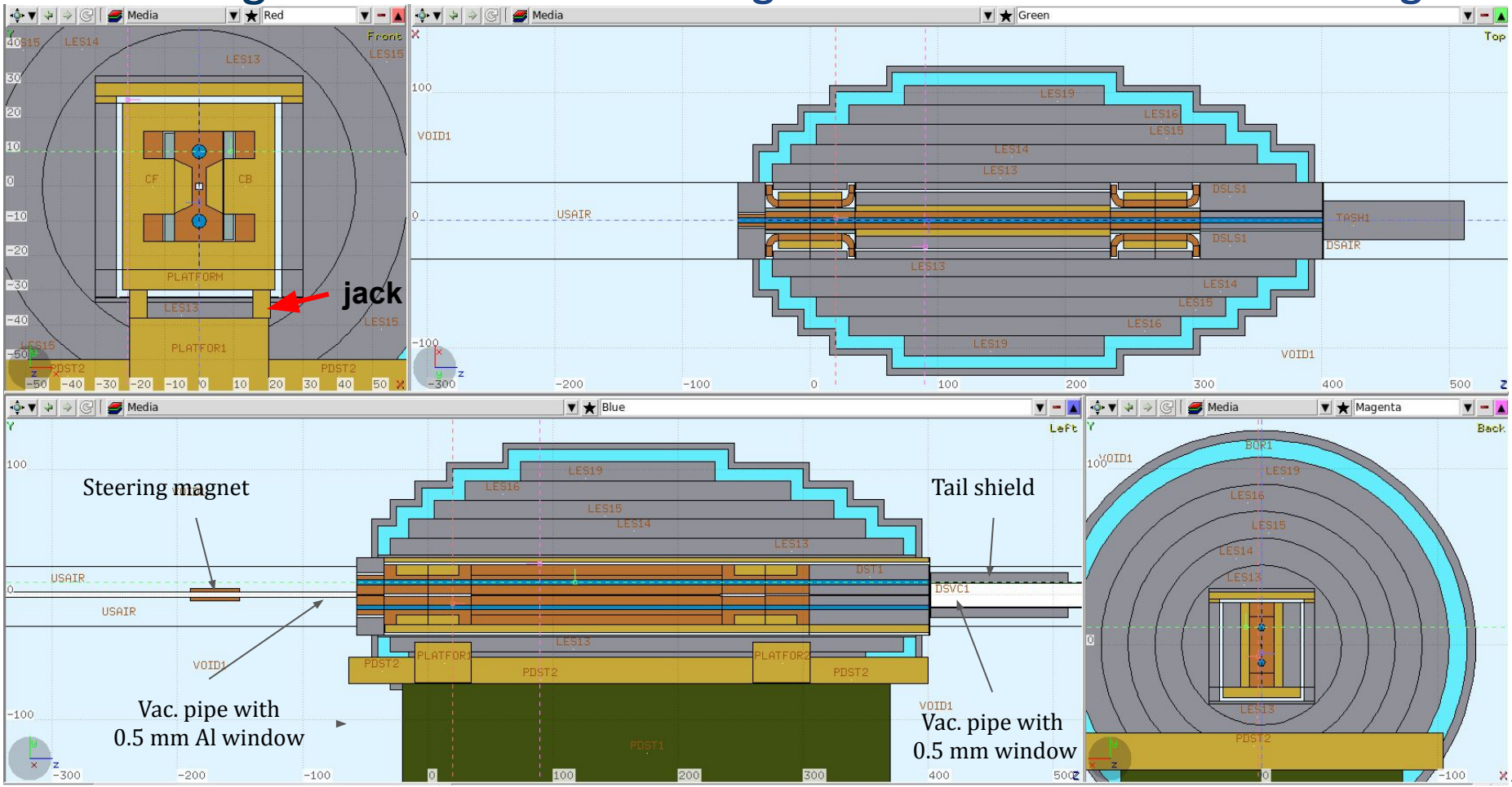
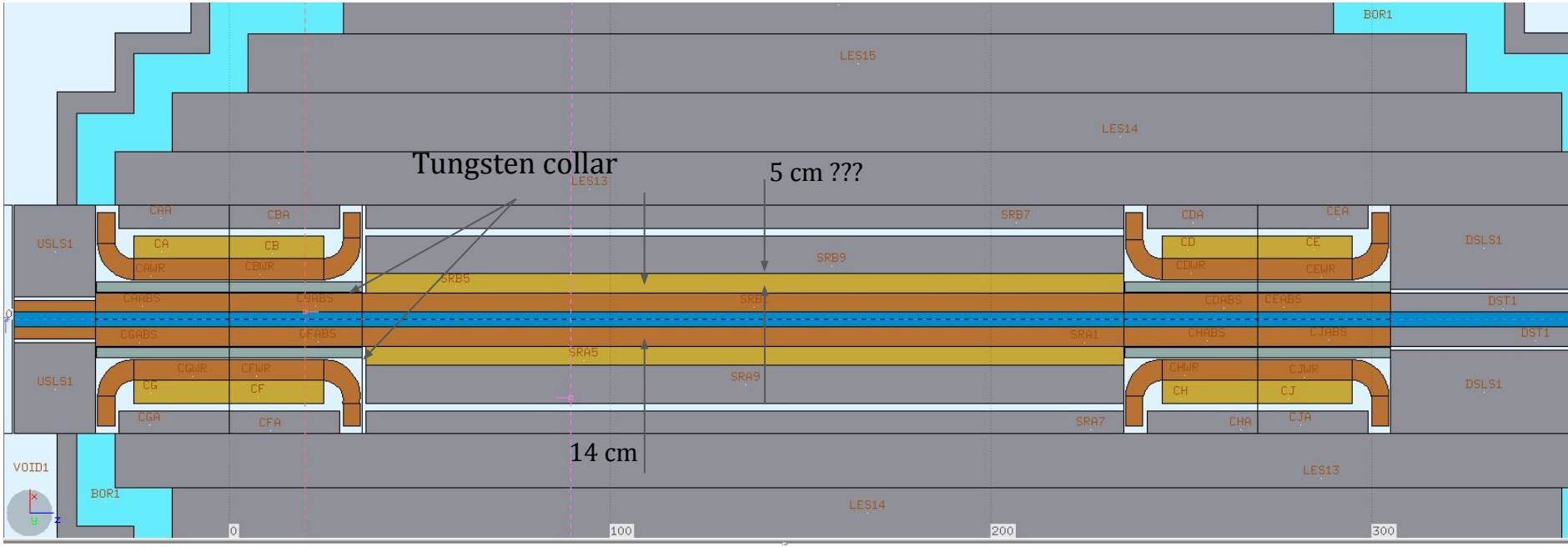
CPS design from Tim in FLUKA. Magnet&Field from Hovanes.+Str. Magnet.

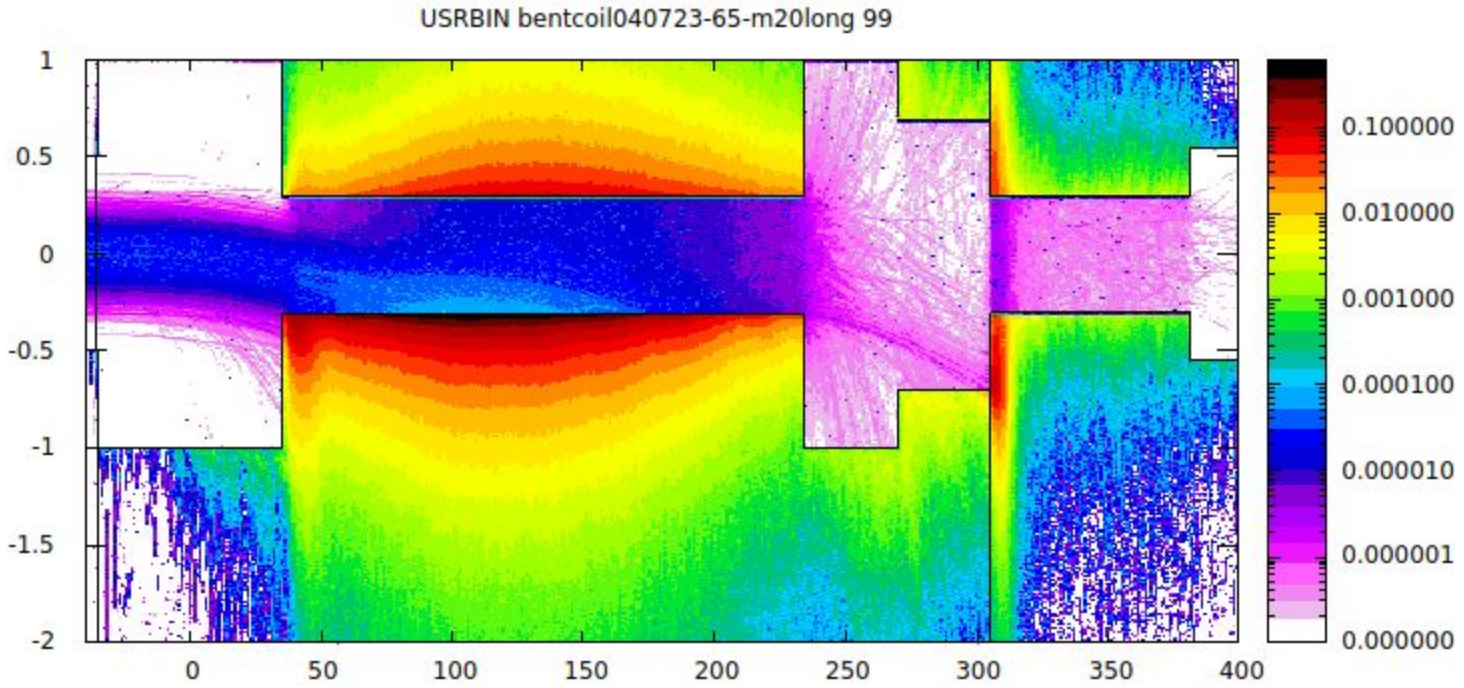


Segmented 14 cm Absorber and Iron Plate thickness.

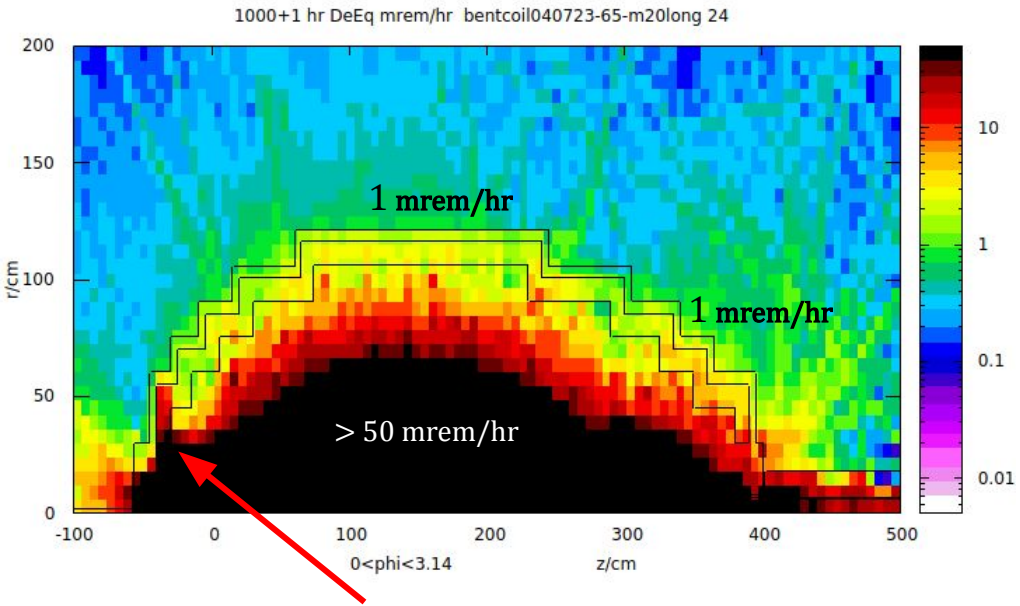


- B-field and magnet dimensions 44×48 cm^2 from Hovanes. Lead & PE scales in 2”×4”×8” blocks.
- Iron plate thickness is dictated by the temperature of the adjacent layer of lead.
- Lead T^o - to be determined from ANSYS calculations for the central part between coils.

Energy Deposition in 6×6 mm^2 Channel of Absorber.

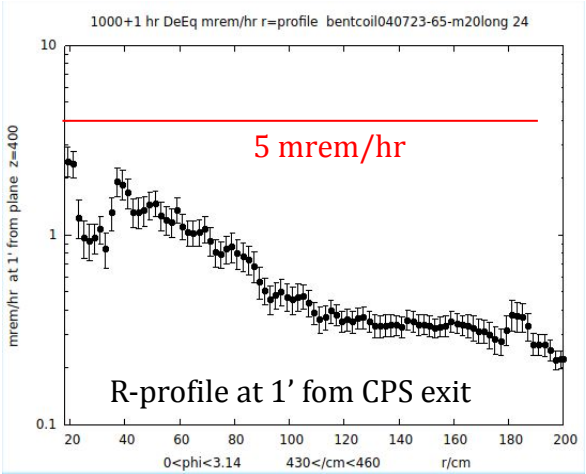


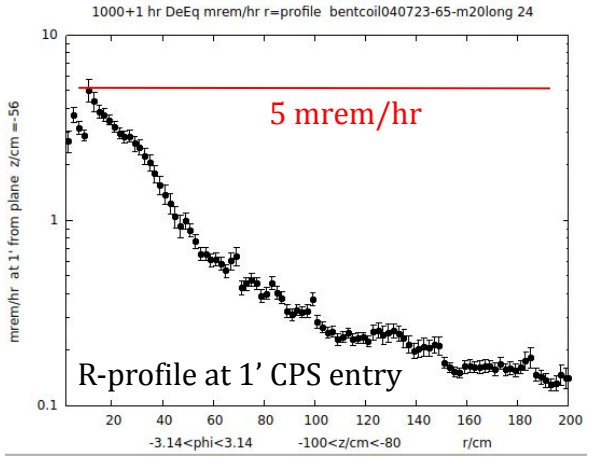
Activation after 1000+1 hrs. NO BPE. In progress.



Effect of a cavity for bent coil return part. To be fixed

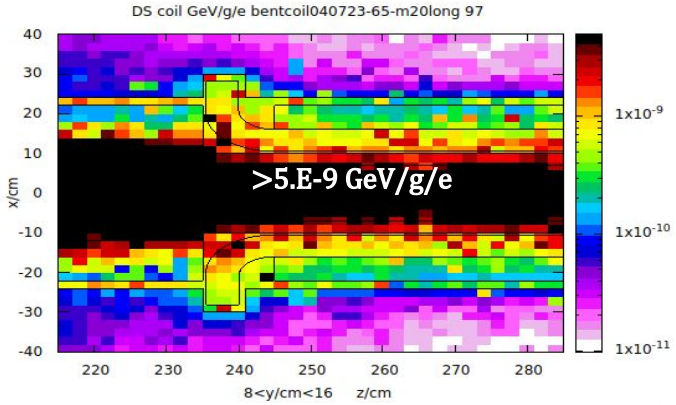
- The CPS diameter to be optimized: 5 cm in lead radius translates to ~5000 kg and ~$35,000.00

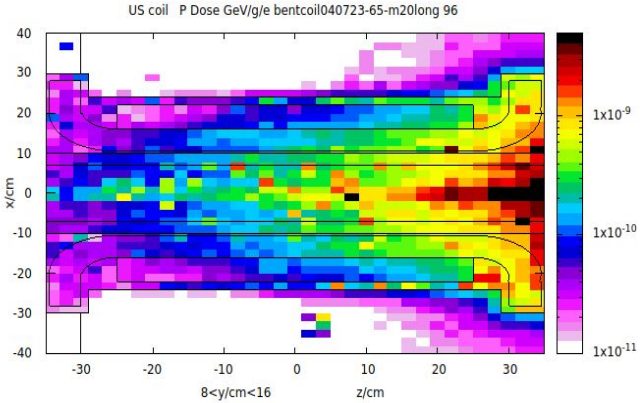


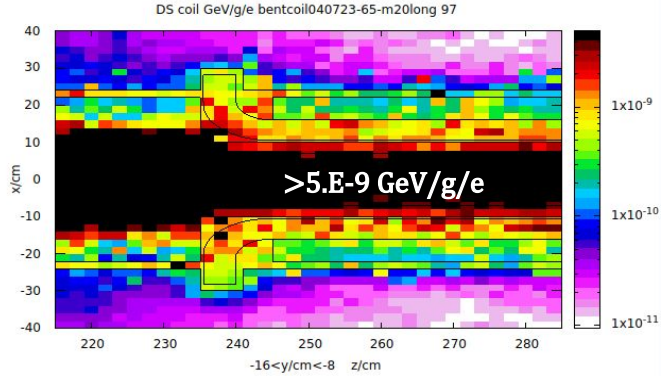


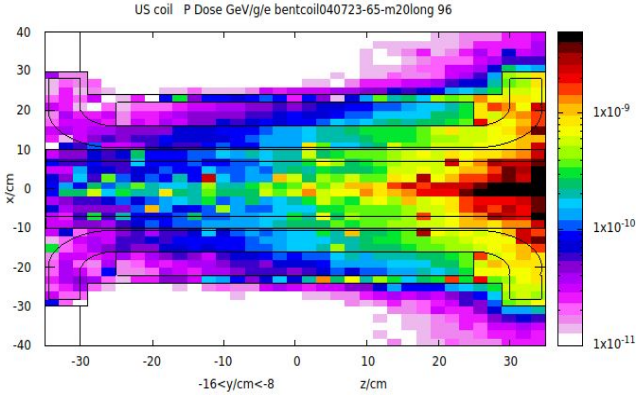
Bent Coil lifetime.

Reference 2.E-8 GeV/g/e => LT ~15-30 years
2.E-9 LT => ~**150-300** years.

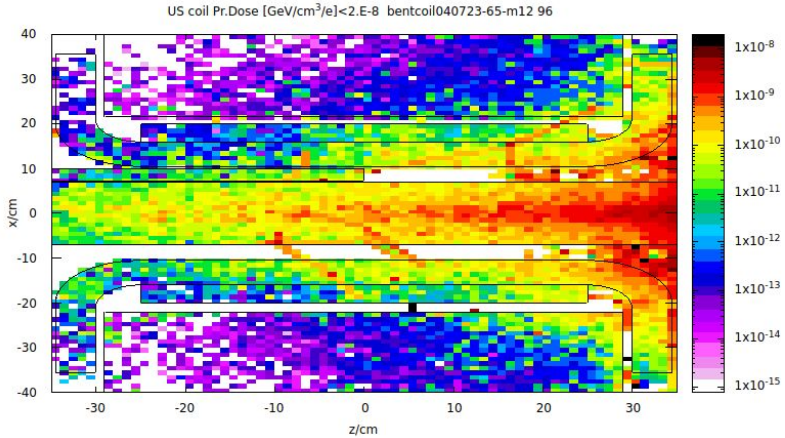






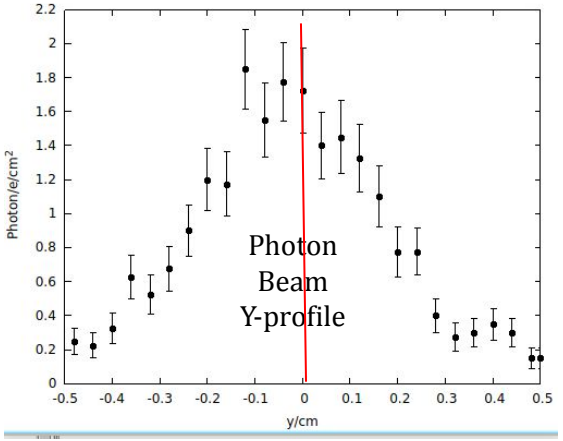


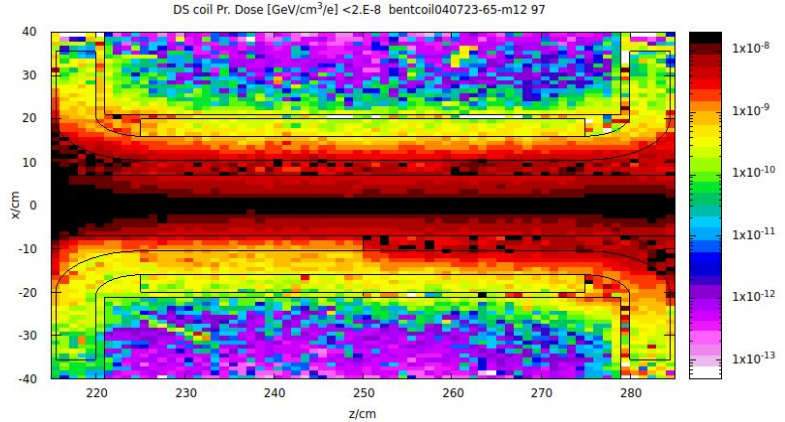
Bent Coil lifetime. Magnet & Field Map from Hovanes + Steering magnet.



Upstream magnet coil.
Max. Dose~**1.E-9 GeV/cm^3/e**
=>Lifetime **300-600** years.
(Reminder:
2.E-8 =>15-30 Years)
Sign. longer with W plate
between coil and Absorber.

Fringe field effect





Downstream magnet coil.
Max Dose ~ **2.E-9** GeV/cm^3/e
=>Lifetime **150-300** years. (2.E-8 =>15-30 Years)
300-600 years with W plate between coil and Absorber.

Things to do proceed with No-W-model.

1. Select iron bar sickness.
   1.1 Produce Power deposition map for central part of the Absorber (V.B.)
   1.2 Perform ANSYS calculations (T.W.).
2. Optimization of the lead shield sizes (V.B.).
3. Optimization of BEam Channel (V.B.).