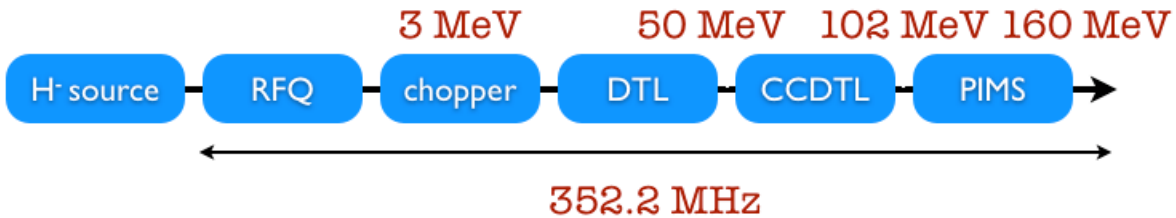


## 3 MeV measurement line

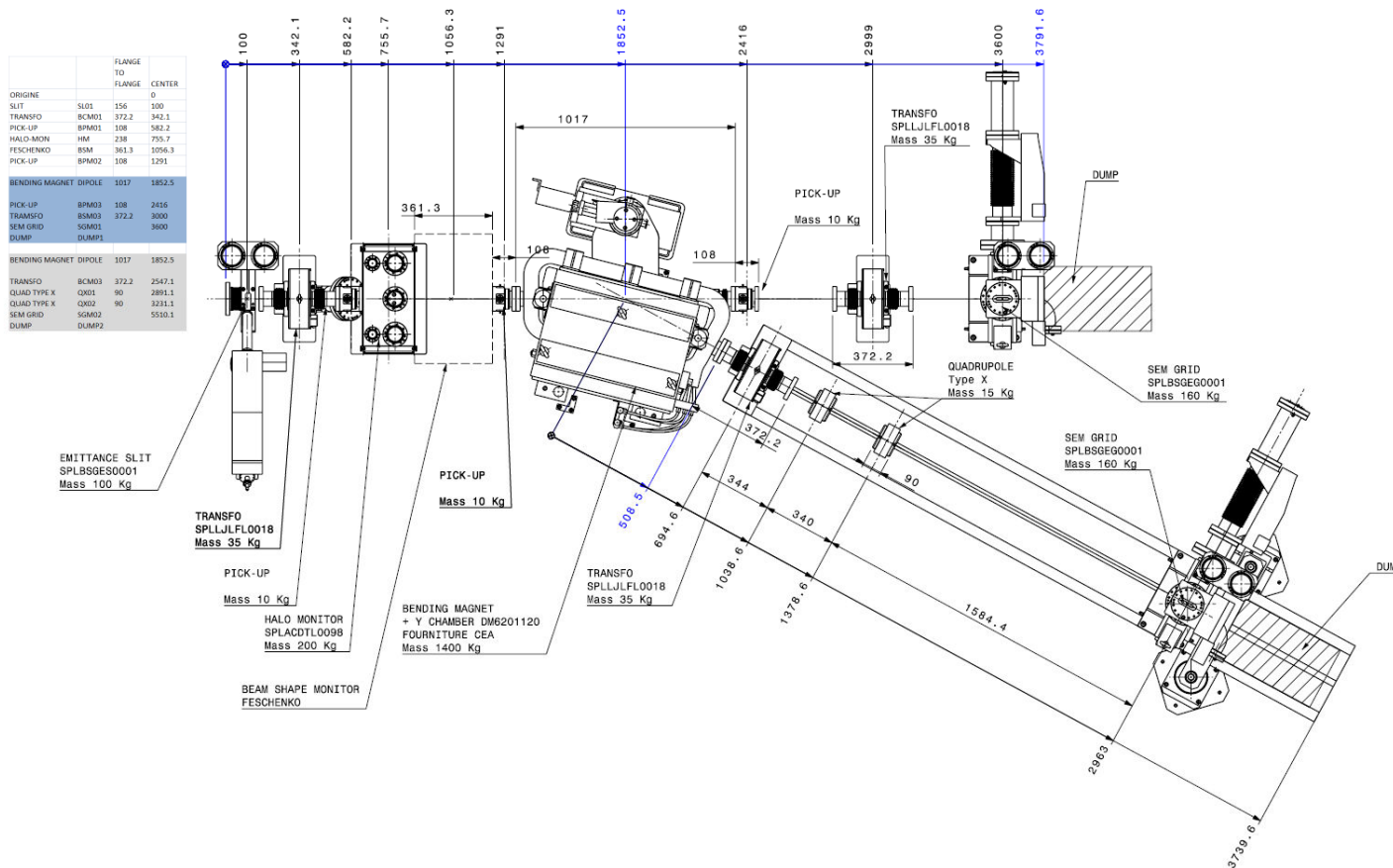
U. Raich

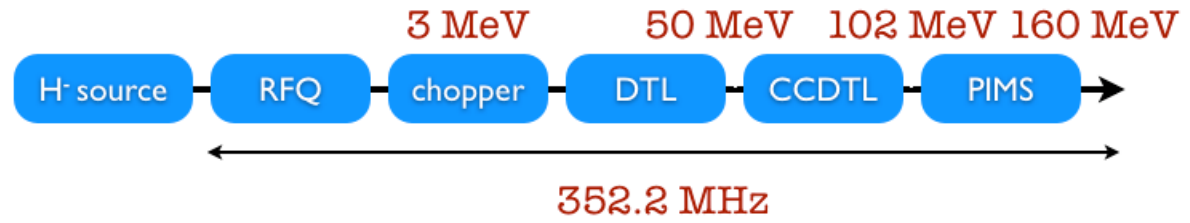
Linac-4 Beam Coordination Committee

20.10.2009

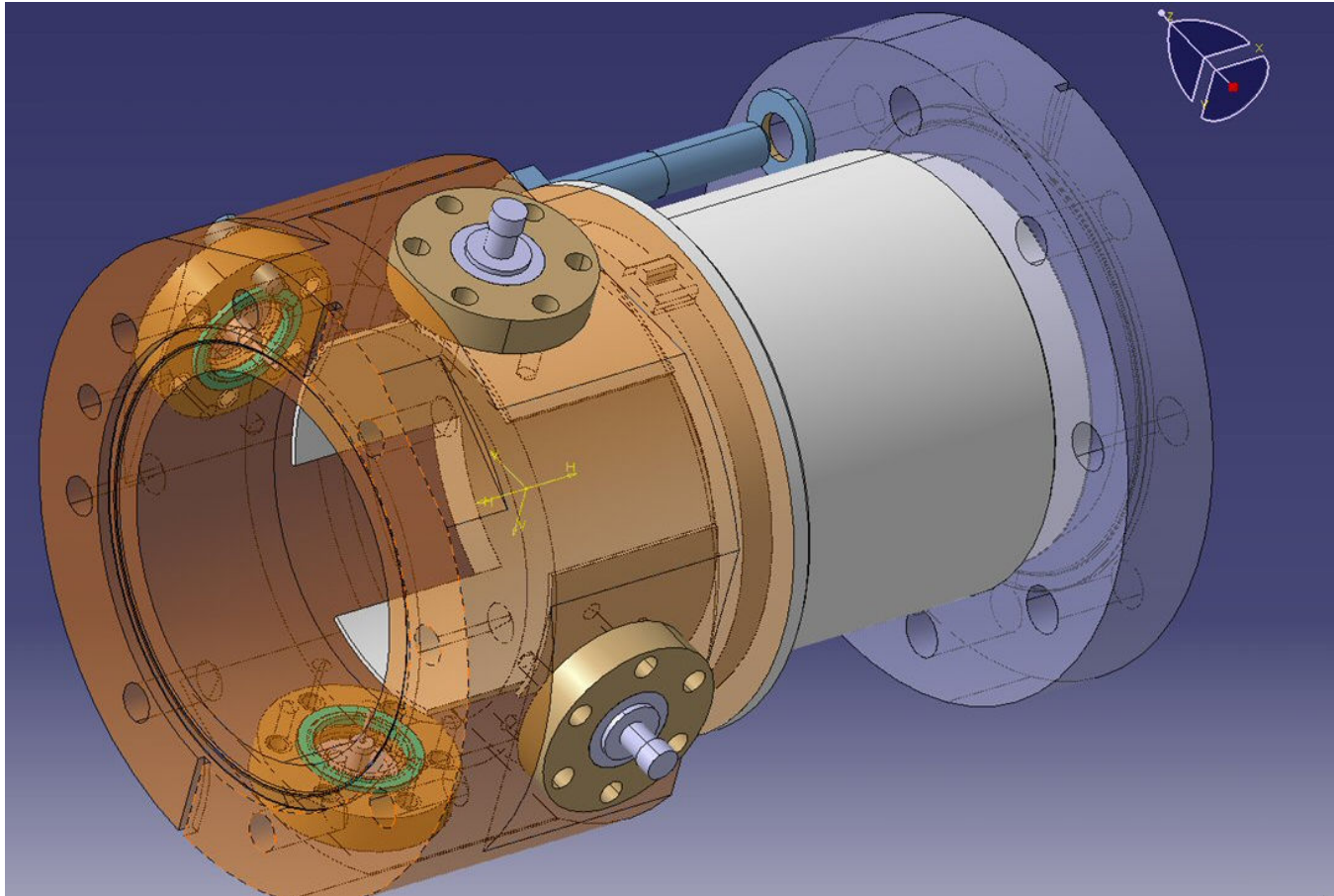


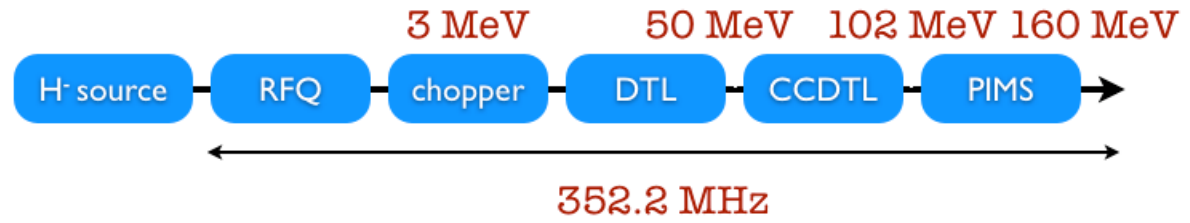
# Layout of the line





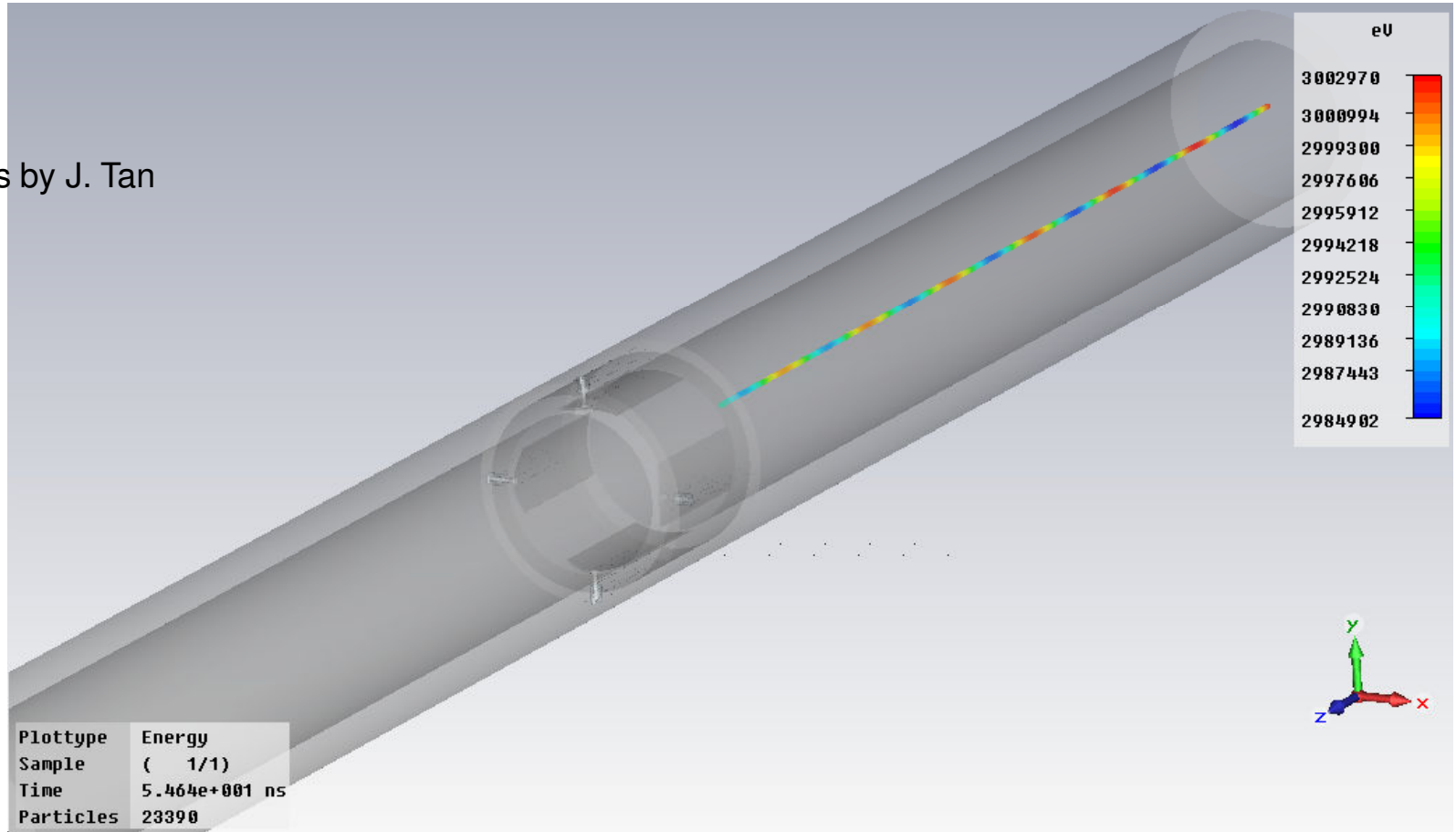
## The BPMS

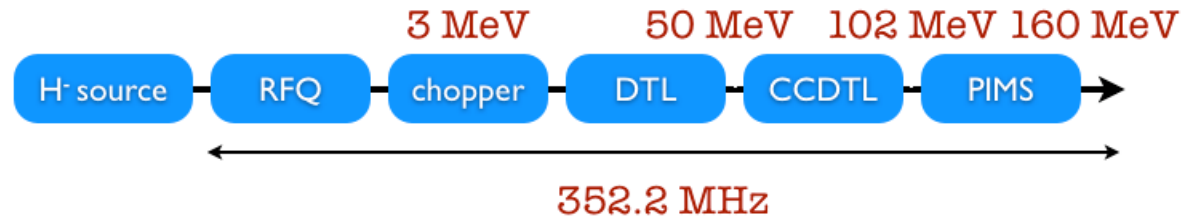




# BPM Simulations

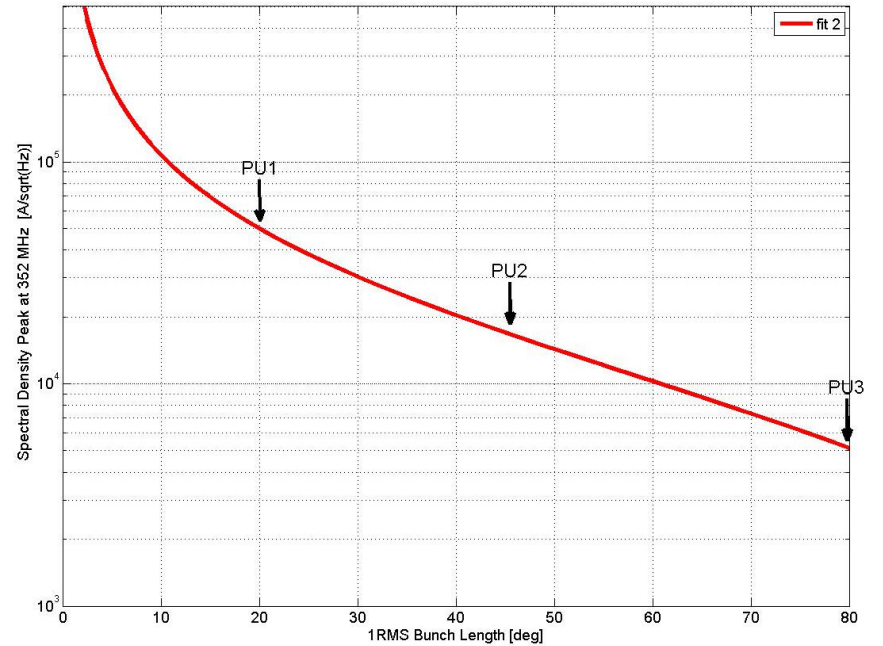
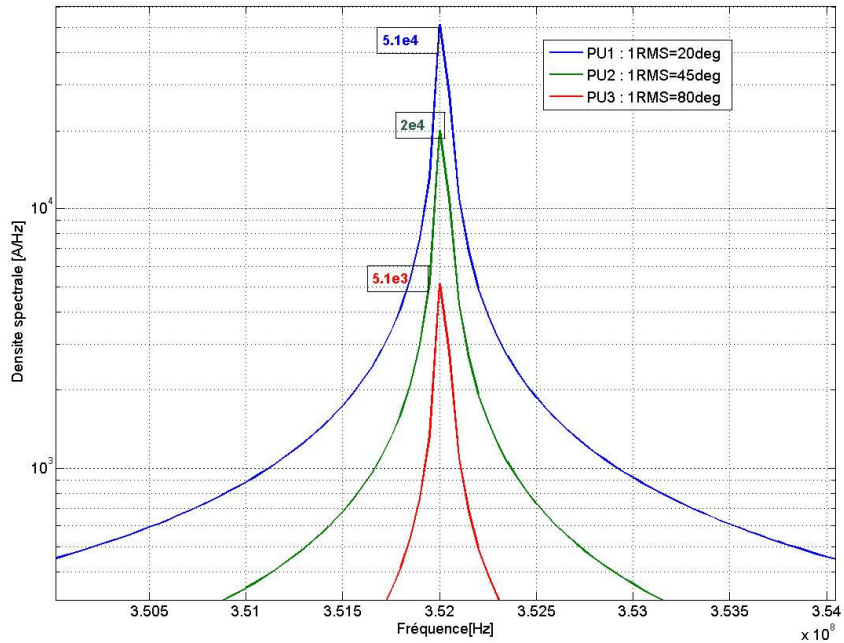
Simulations by J. Tan

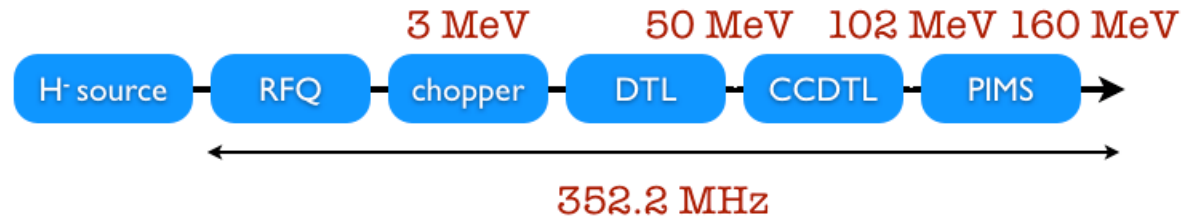




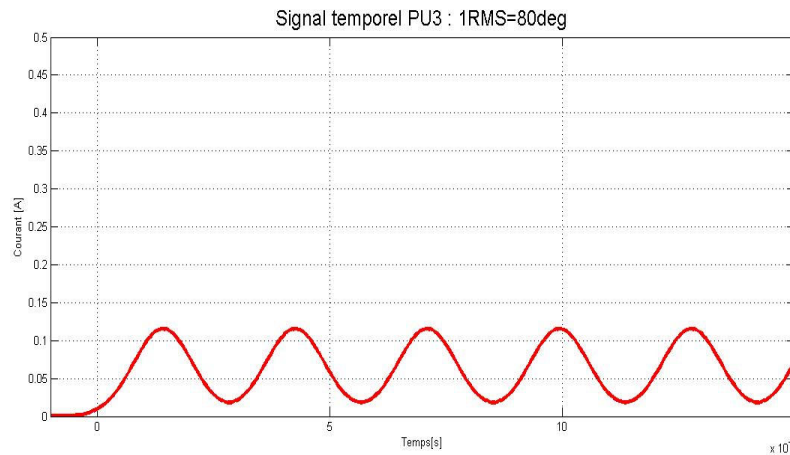
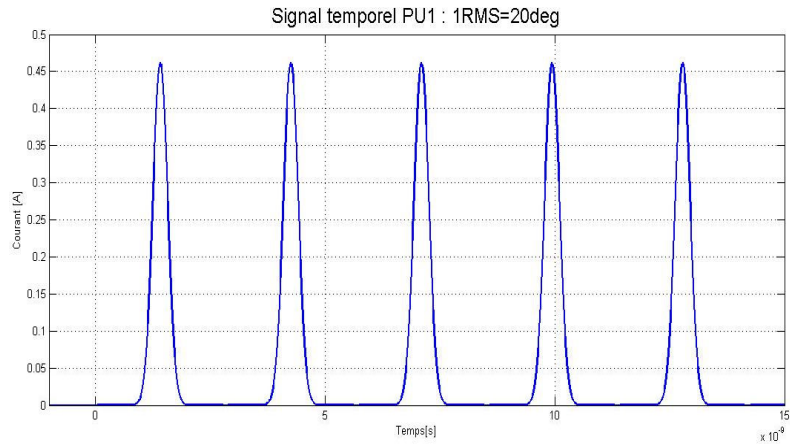
# BPM Simulations

Beam Spectrum in the Measurement Line (Downstream the RFQ)

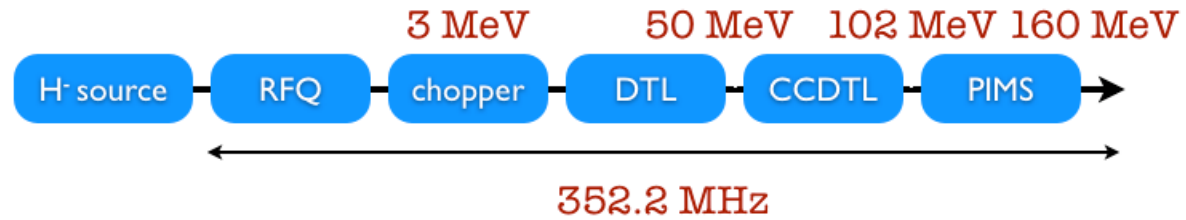




## BPM simulations

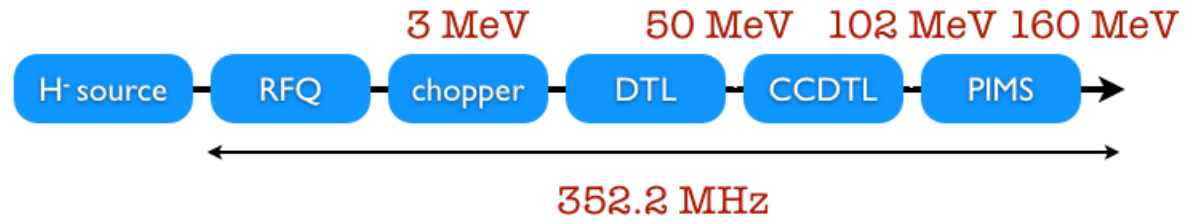


Simulations: J. Tan

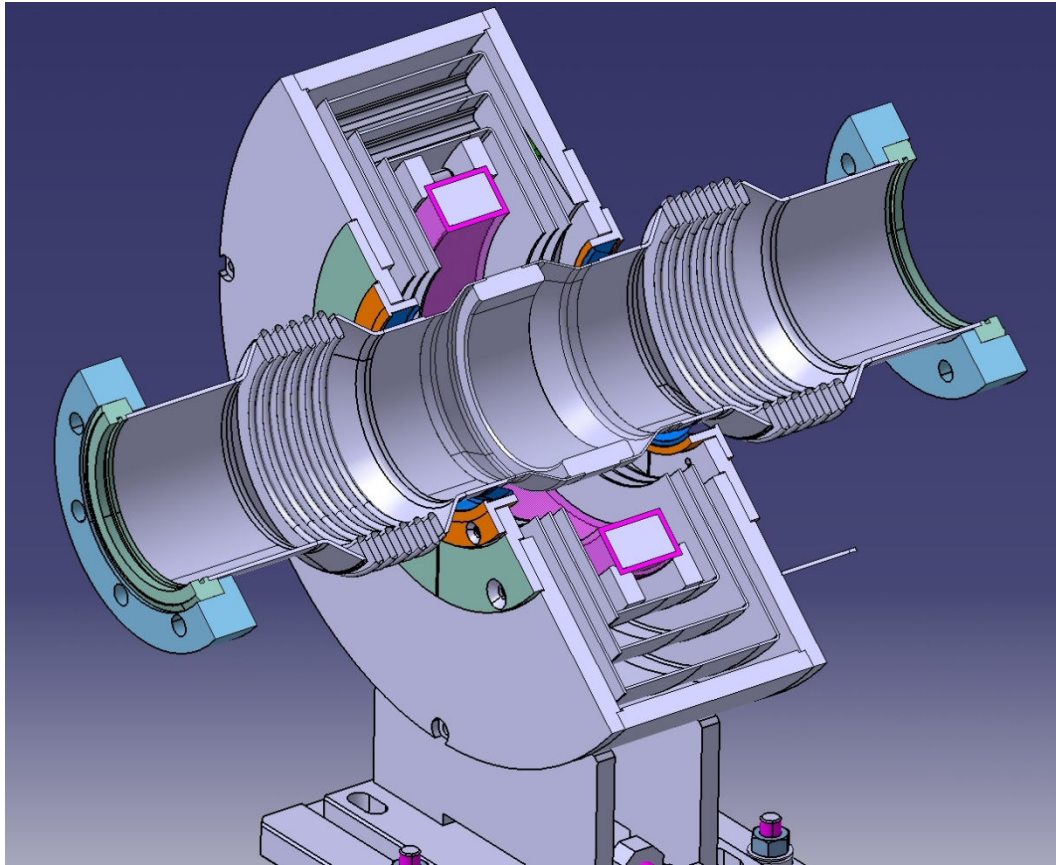


## Status of BPMs

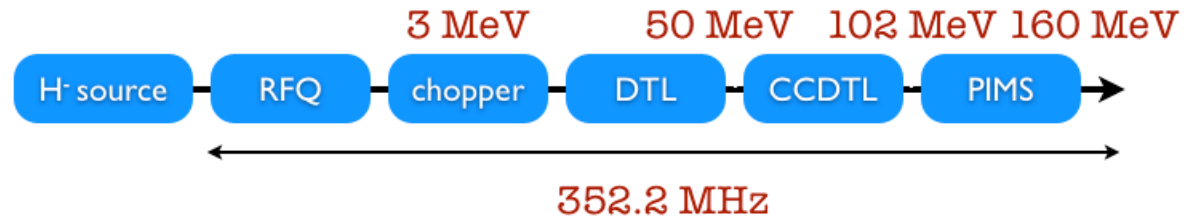
- Mechanical drawing available but not approved yet
- Simulations being done to determine resolution
  - Position
  - Intensity
  - Phase
- Consequences of debunching being studied using Giulia's optics simulations
- 3 devices + electronics foreseen for June 2010
- 3 MeV measurement line will be used as test bench for all Linac-4 BPMs



## Transformer

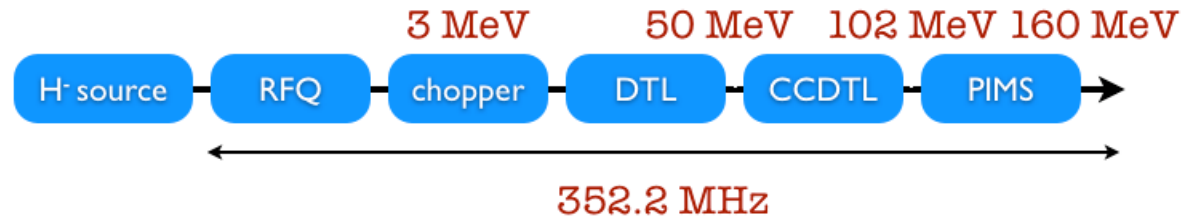




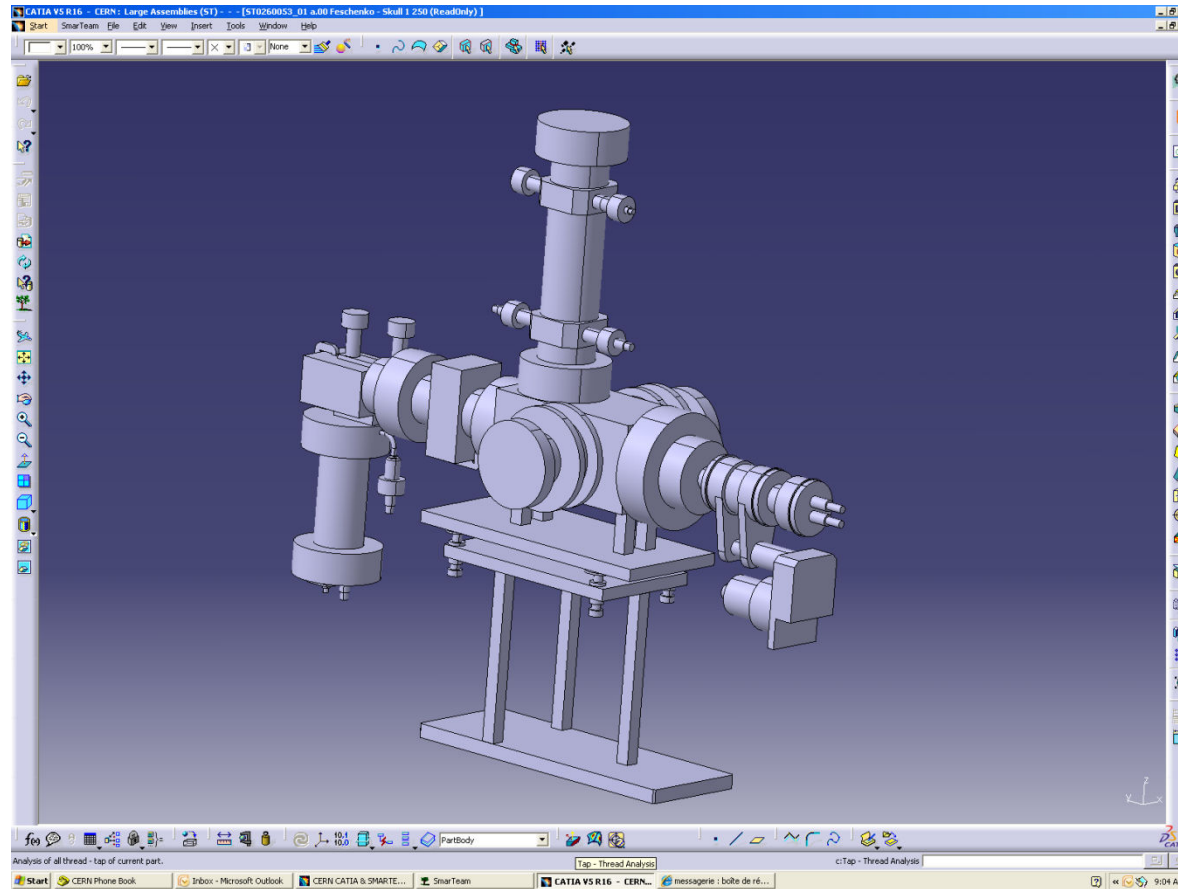


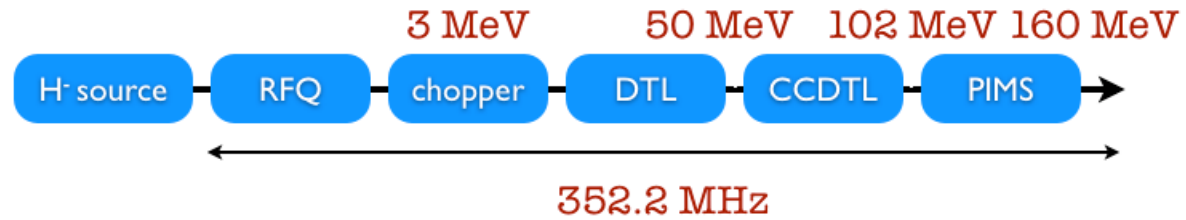
## Status of Transformer

- Drawings ready for approval
- Workshop is informed
- The ceramics are ordered (has longest delay) and will be delivered by March 2010
- 2 Devices ready by June 2010
- Will use same electronics as transformers at source and in LEBT
- 3 MeV measurement line can be used to test new (and cheaper) electronics to be used for Linac-4
- EMC tests done with pulsing Quadrupole next to the transformer



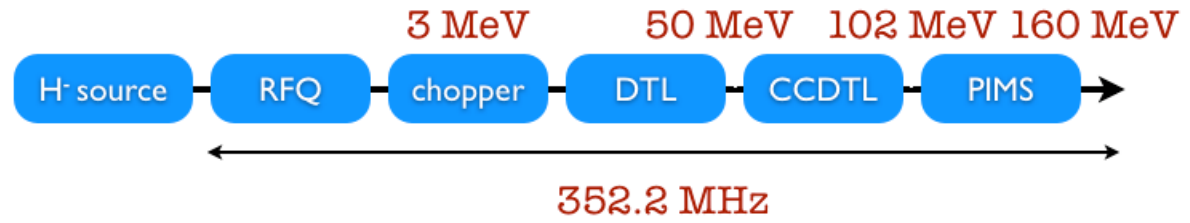
## BSM (Feschenko Monitor)



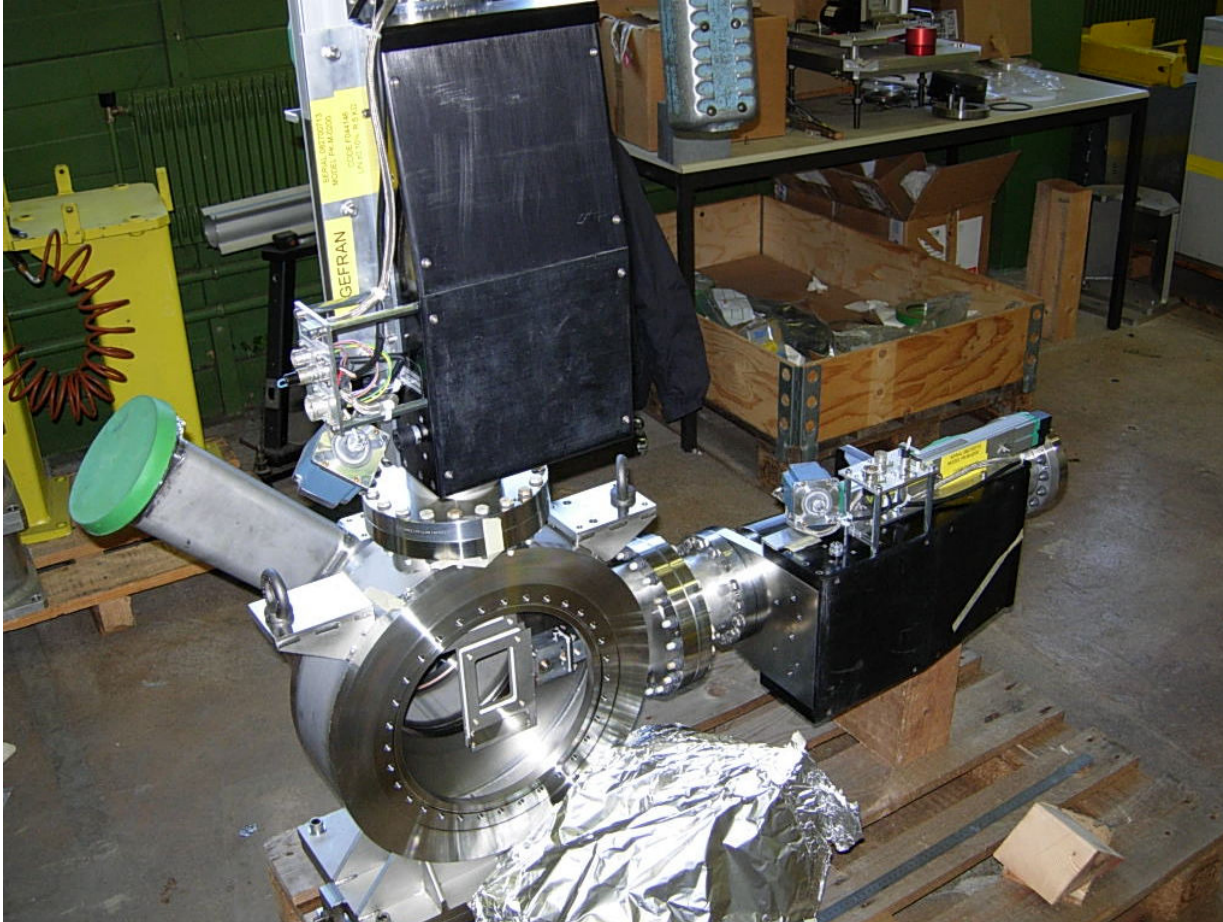


## Status of BSM

- Preliminary drawing available
- Feschenko and collaborator will come to CERN 2.11 – 6.11 to discuss details
- First inspection by Didier does not show any mechanical incompatibilities
- Electronics and software specifications to be formalized
- Device should be ready by the end of 2010

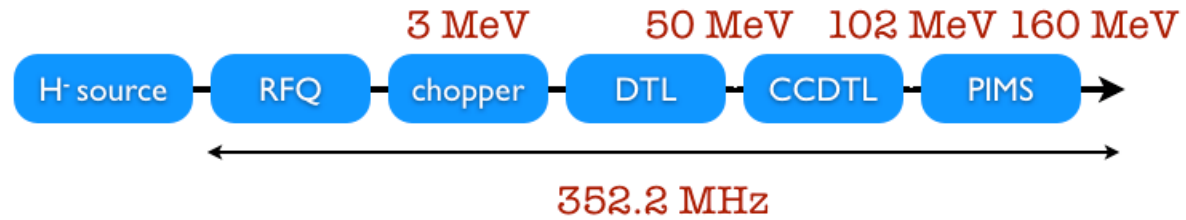


## Emittance Meter / SEMGrid



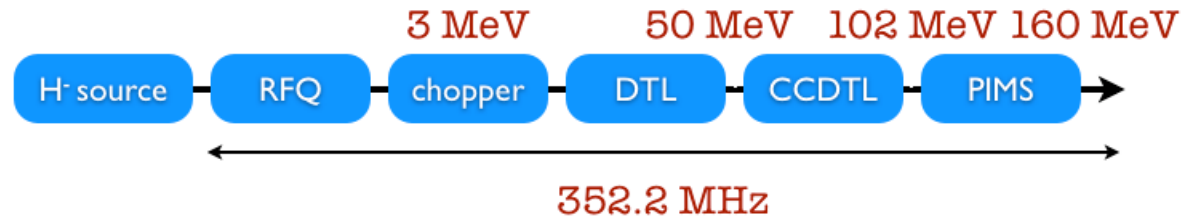
CERN, 20.October 2009

Uli Raich BE/BI



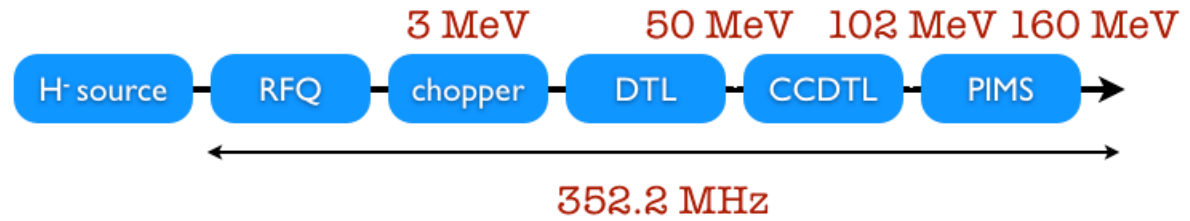
## Status of Emittance Meter / SEMGrid

- Emittance meter is currently installed on 3 MeV source
- Consists of slit and grid in 2 tanks
  - Grid to be re-used
  - Slit about to be re-designed for higher than source energy (up to 12 MeV)  
Simulations have been made
  - Electronics ready
  - LabView program ready for testing in beam
- Size problems for integration into the tunnel (sticks into transport zone)

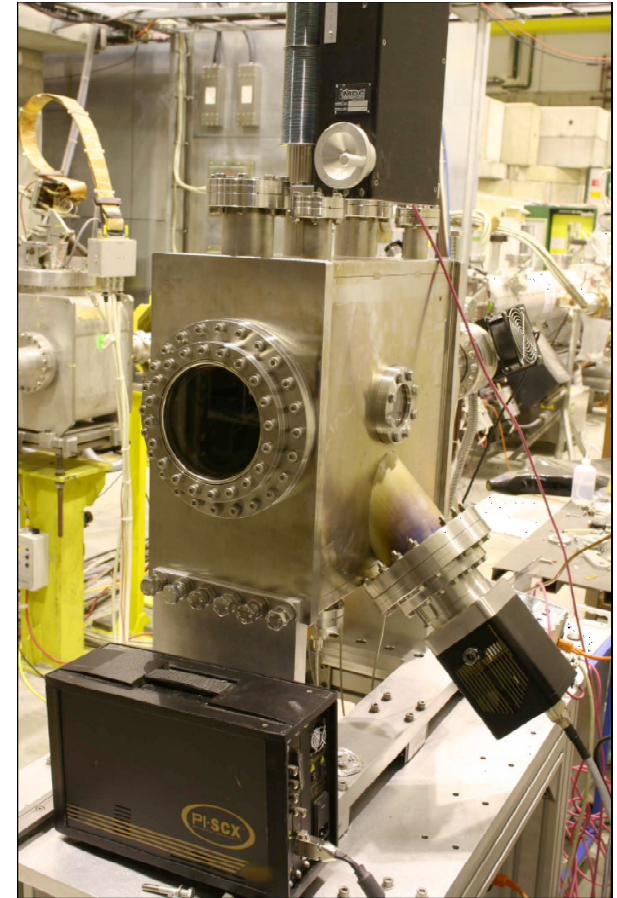
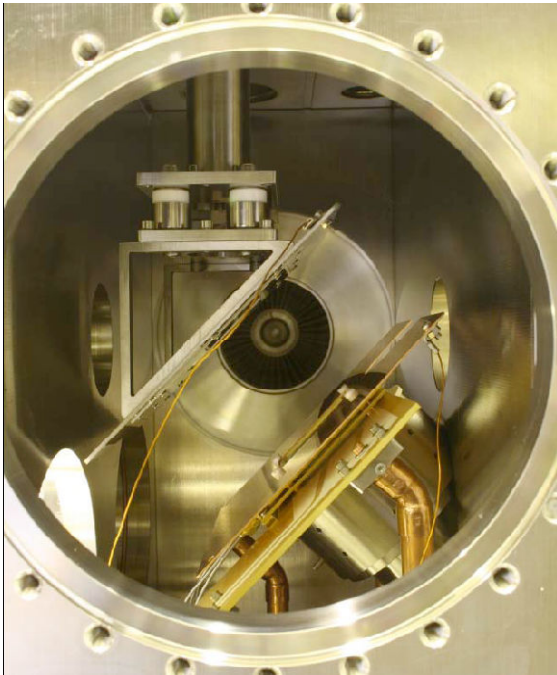


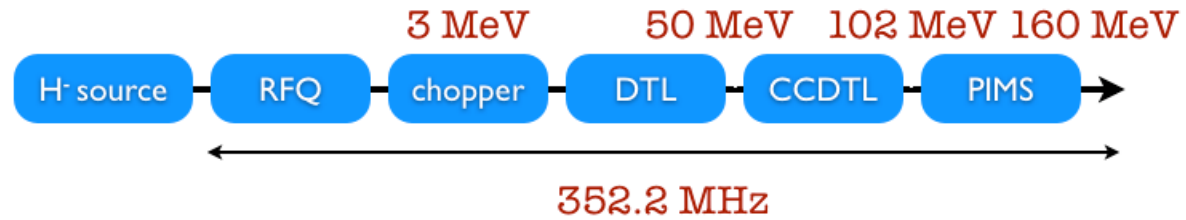
## SEMGrid in spectrometer line

- Not yet clear if in/out mechanism is needed
- In/out mechanisms do exist
- Integration with dump to be studied
- 1 plane of 0.5mm wire distance
- Electronics solution is available but a new and cheaper one may be studied
- Software to be specified and written



## Halo Monitor

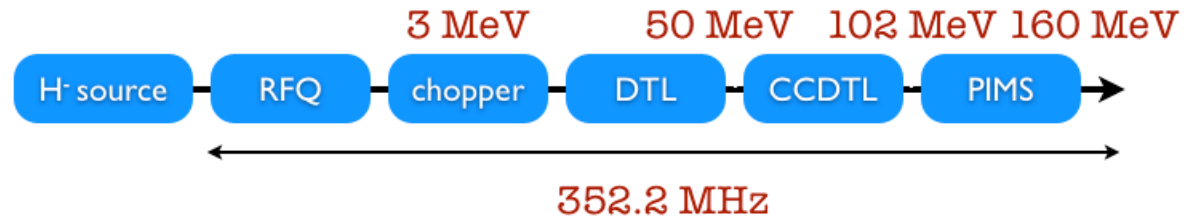




## Halo Monitor

- Device developed by M. Hori
- Device is ready and was tested in beam
- Commissioning in 3 MeV to be done
- Take-over of responsibility for this device by CERN staff





## Instruments in the measurement line

- Transformers
  - 2 transformers in the straight section of the line
  - Design done, ready for approval
- Halo Monitor
  - finished
- Emittance Meter box
  - hor/ver slit (on 1 movement)
  - hor/ver SEMGrids on 2 movements
  - will use the SEMGrids, movement and tank from source emittance meter
  - new, high energy slit under design
- SEMGrid
  - retractable hor (possibly on movement)
- BPMs
  - preliminary design done
- BSM
  - preliminary design received from INR