



# UA9 layout on SPS

Gianluca Cavoto

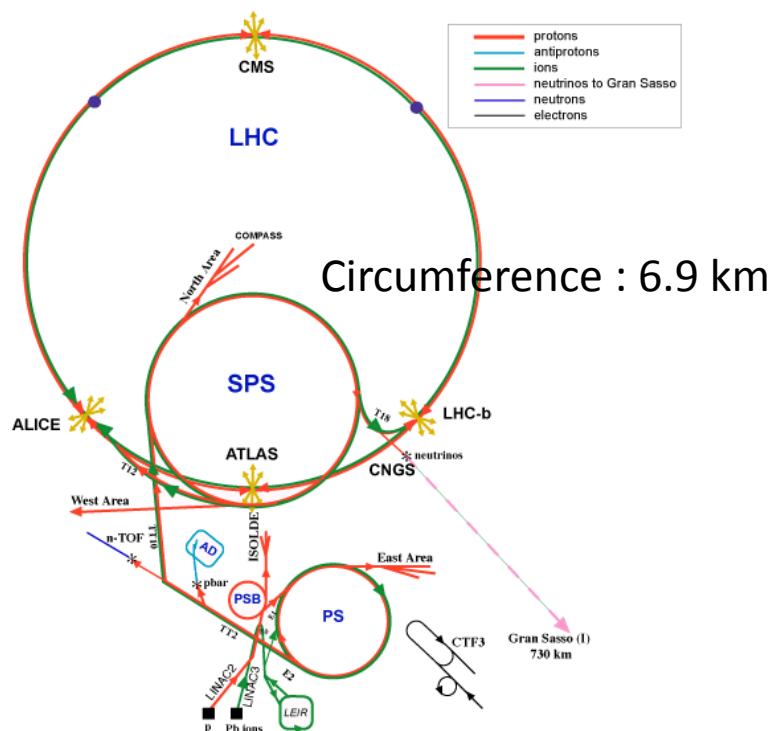
INFN Roma

Crystal collimation workshop

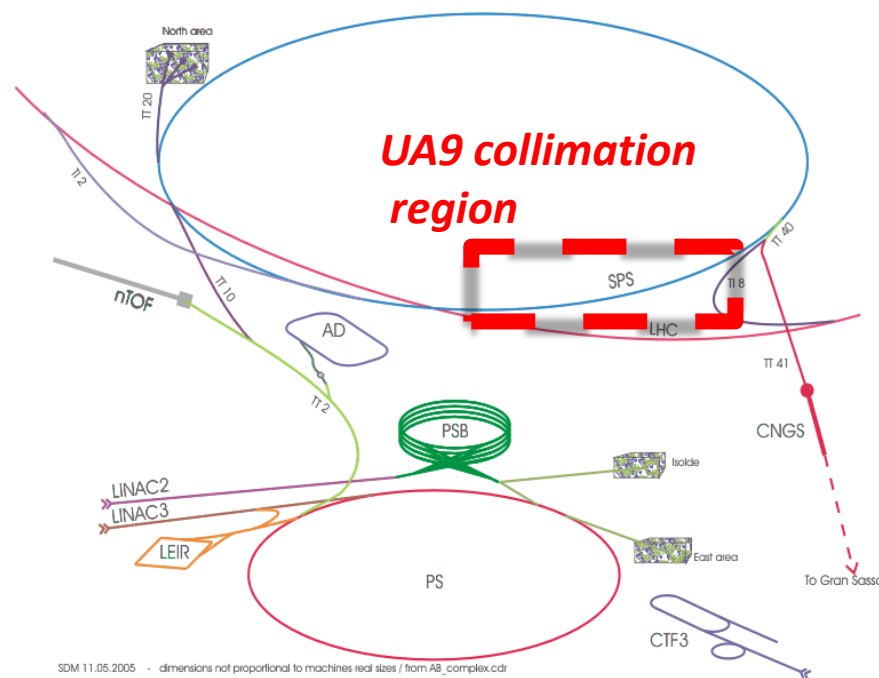
CERN

25/27 Oct 2010

CERN Accelerators  
(not to scale)



LHC: Large Hadron Collider  
SPS: Super Proton Synchrotron  
AD: Antiproton Decelerator  
ISOLDE: Isotope Separator OnLine DEvice  
PSB: Proton Synchrotron Booster  
PS: Proton Synchrotron  
LINAC: LINear ACcelerator  
LEIR: Low Energy Ion Ring  
CNGS: Cern Neutrinos to Gran Sasso

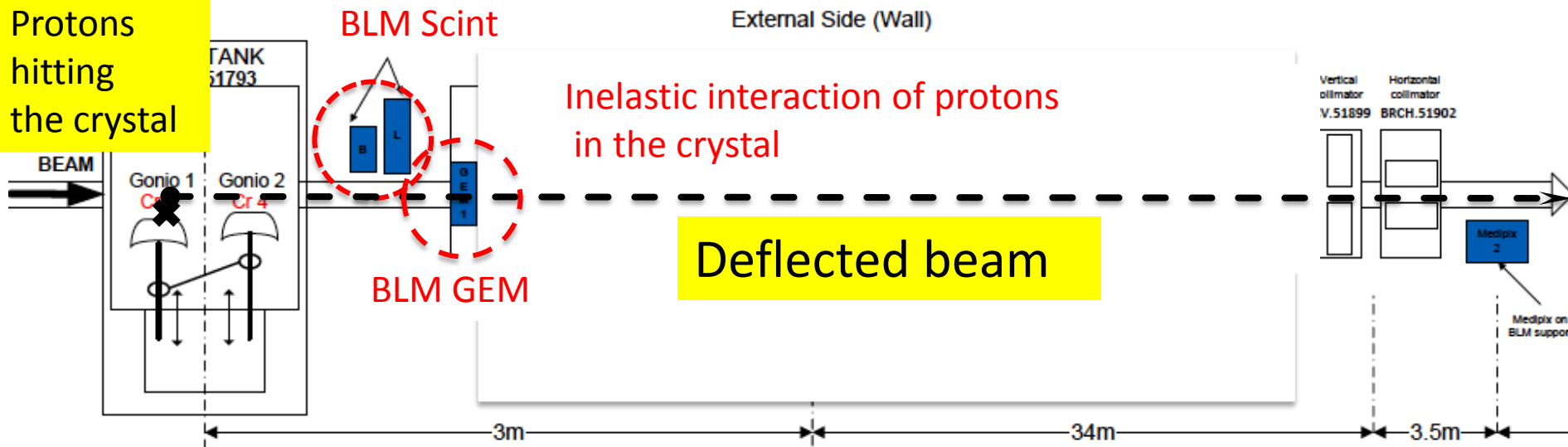


SDM 11.05.2005 - dimensions not proportional to machines real sizes / from AB\_complex.cdr

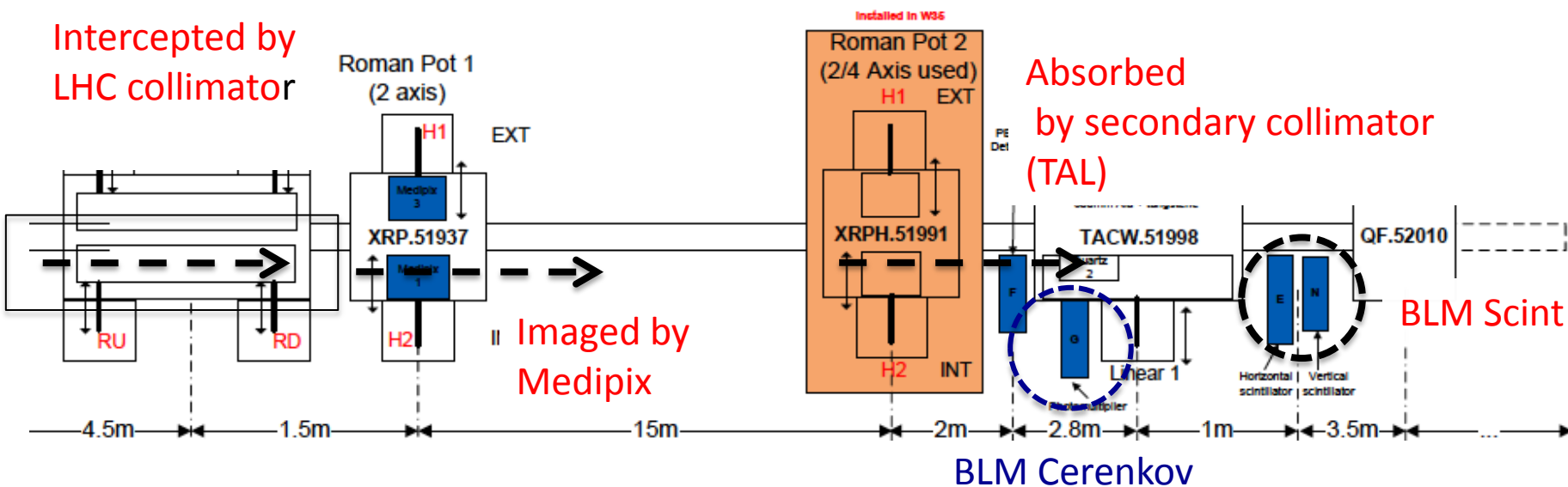
Data-taking during dedicated **Machine Development** days  
with SPS beam in coast mode (~5 in a year).

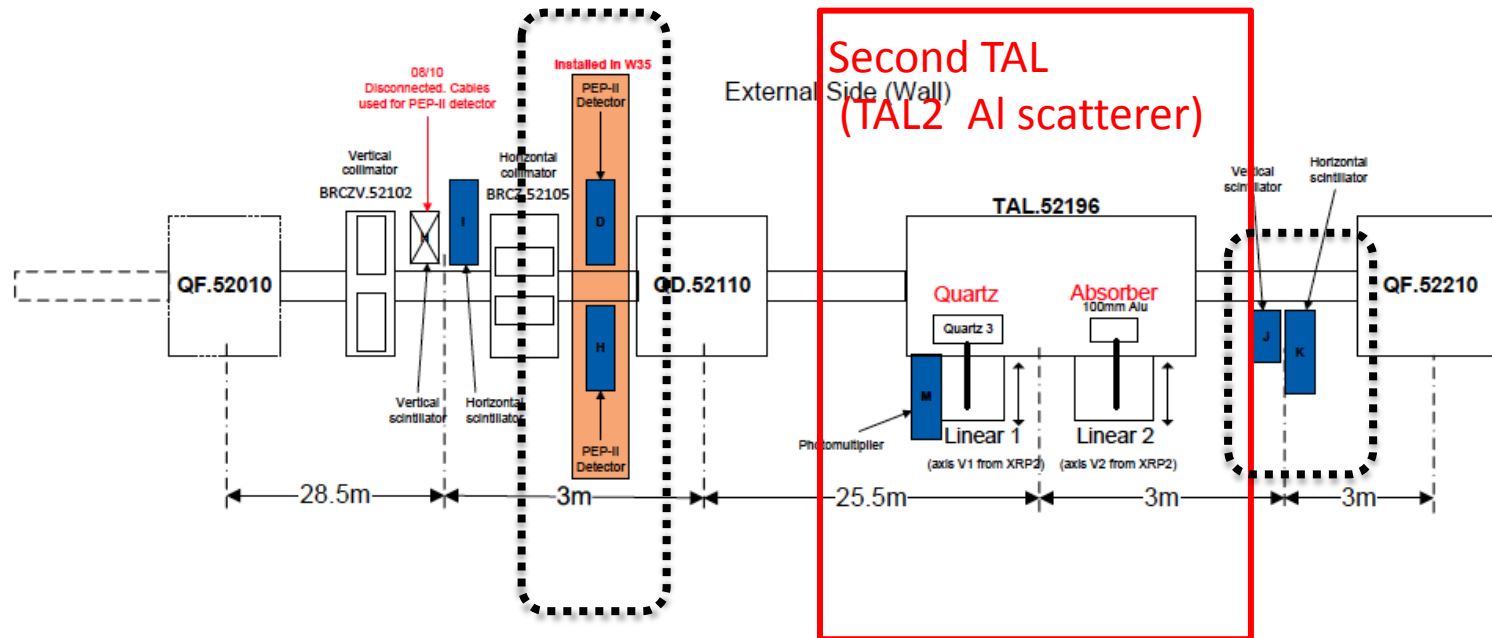
# Collimation region

Protons  
hitting  
the crystal



Intercepted by  
LHC collimator



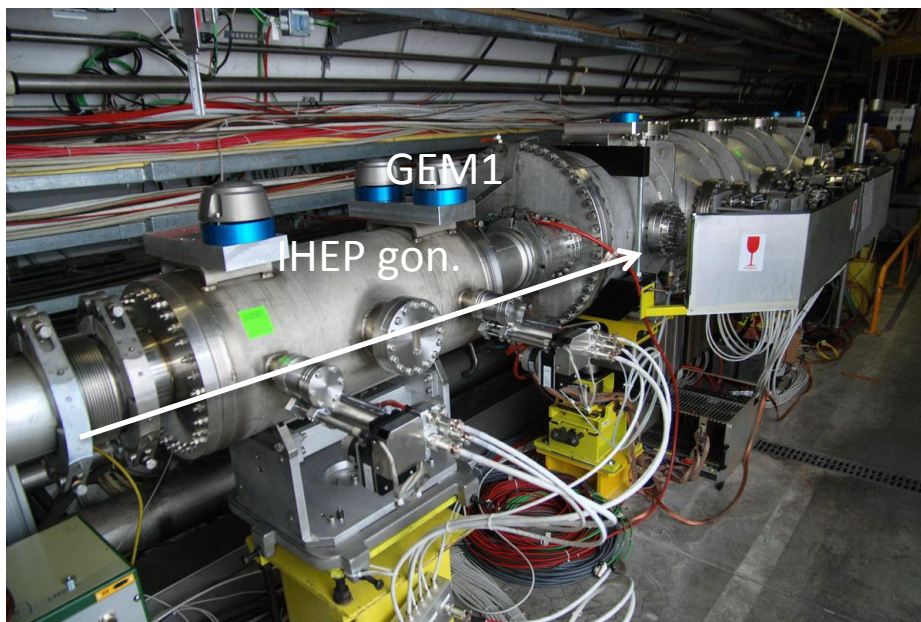


## Scatterer + BLM (scint and Cerenkov)

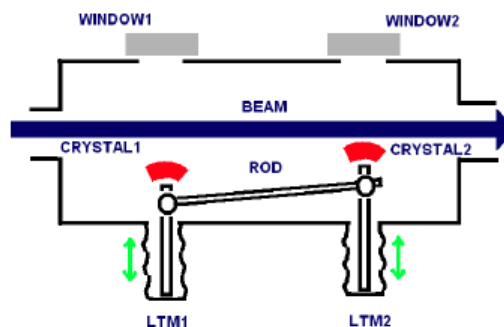
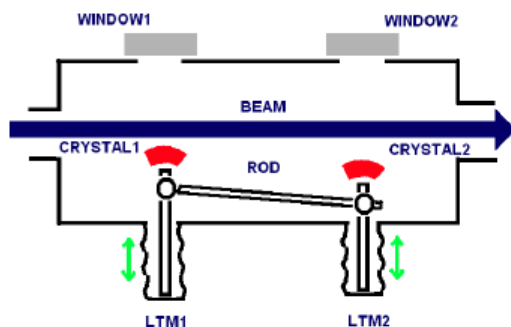
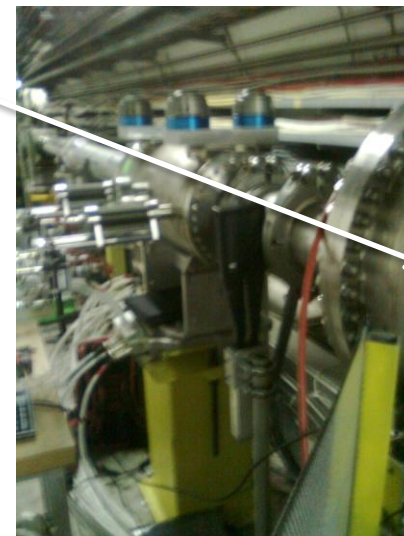
in highly *dispersive* region

Measure the effect of inelastic and quasi elastic [diffractive] events

Crystal 3 and 4



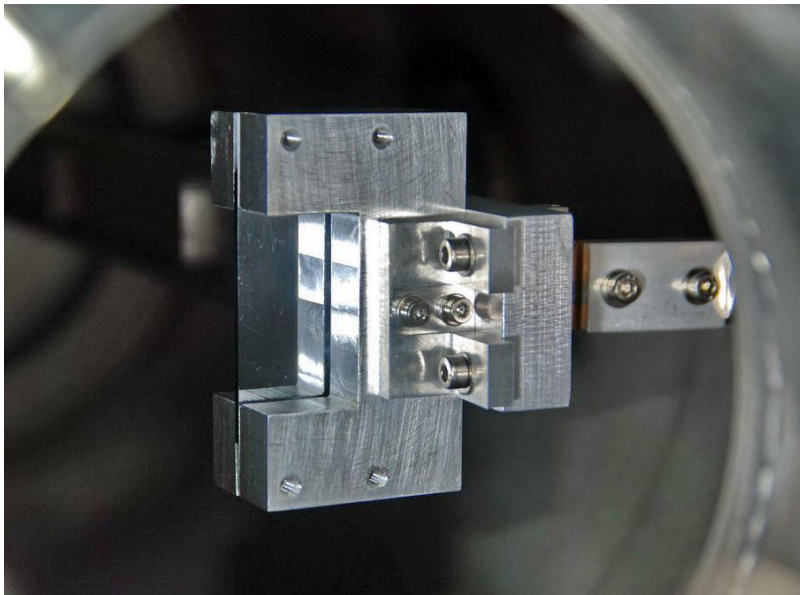
Scint B & L



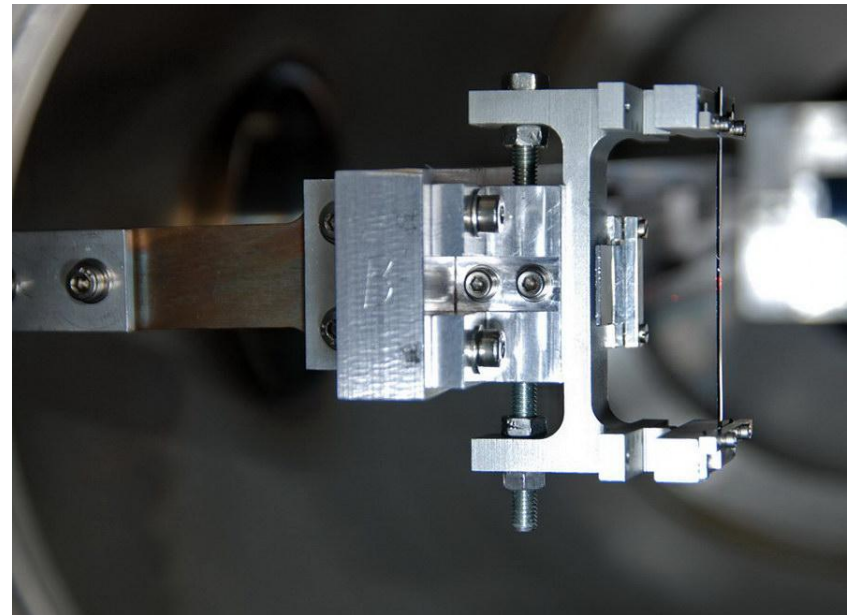
IHEP goniometer

# Crystal in IHEP tank

Quasi mosaic crystal



Strip crystal

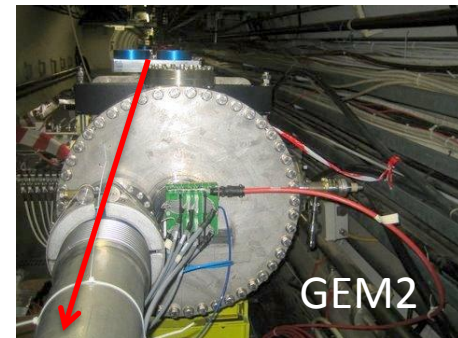
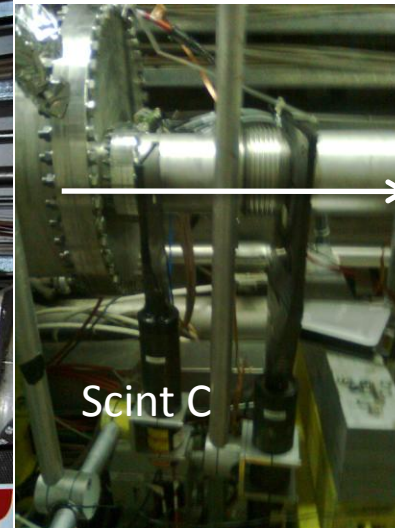
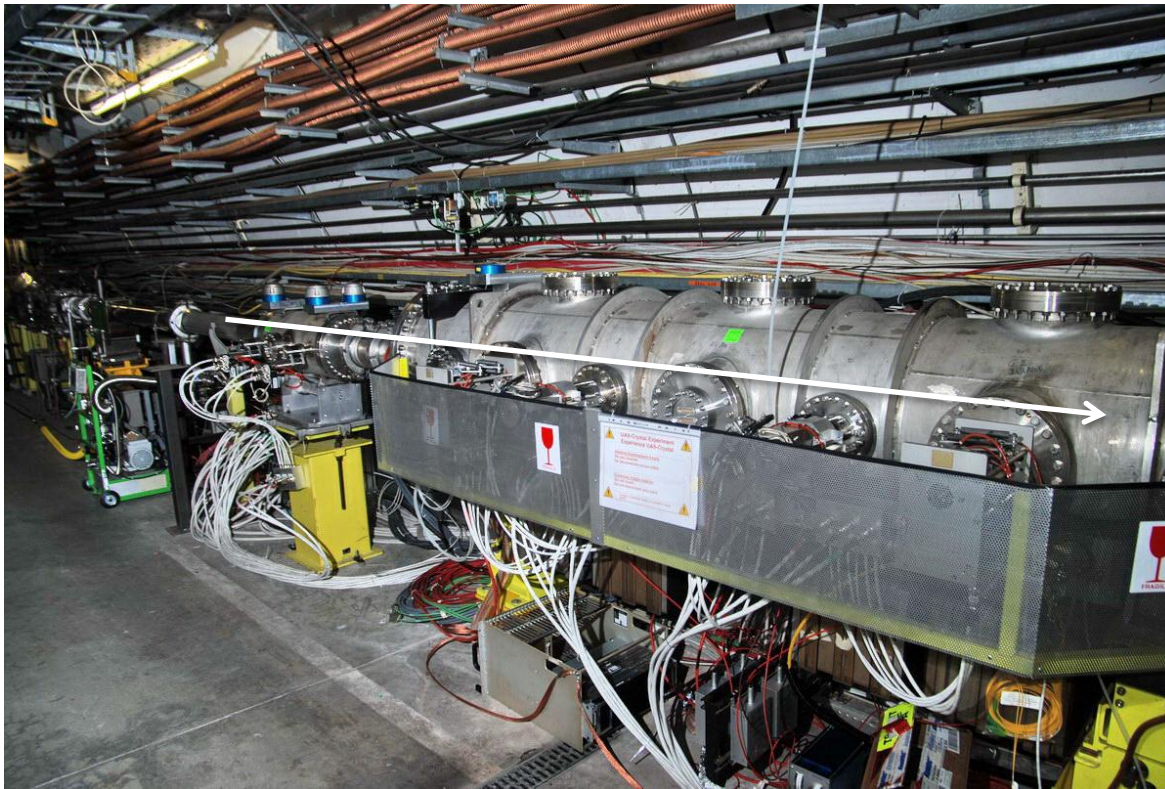


Crystal 3

Crystal 4



# Ex-RD22 CERN tank

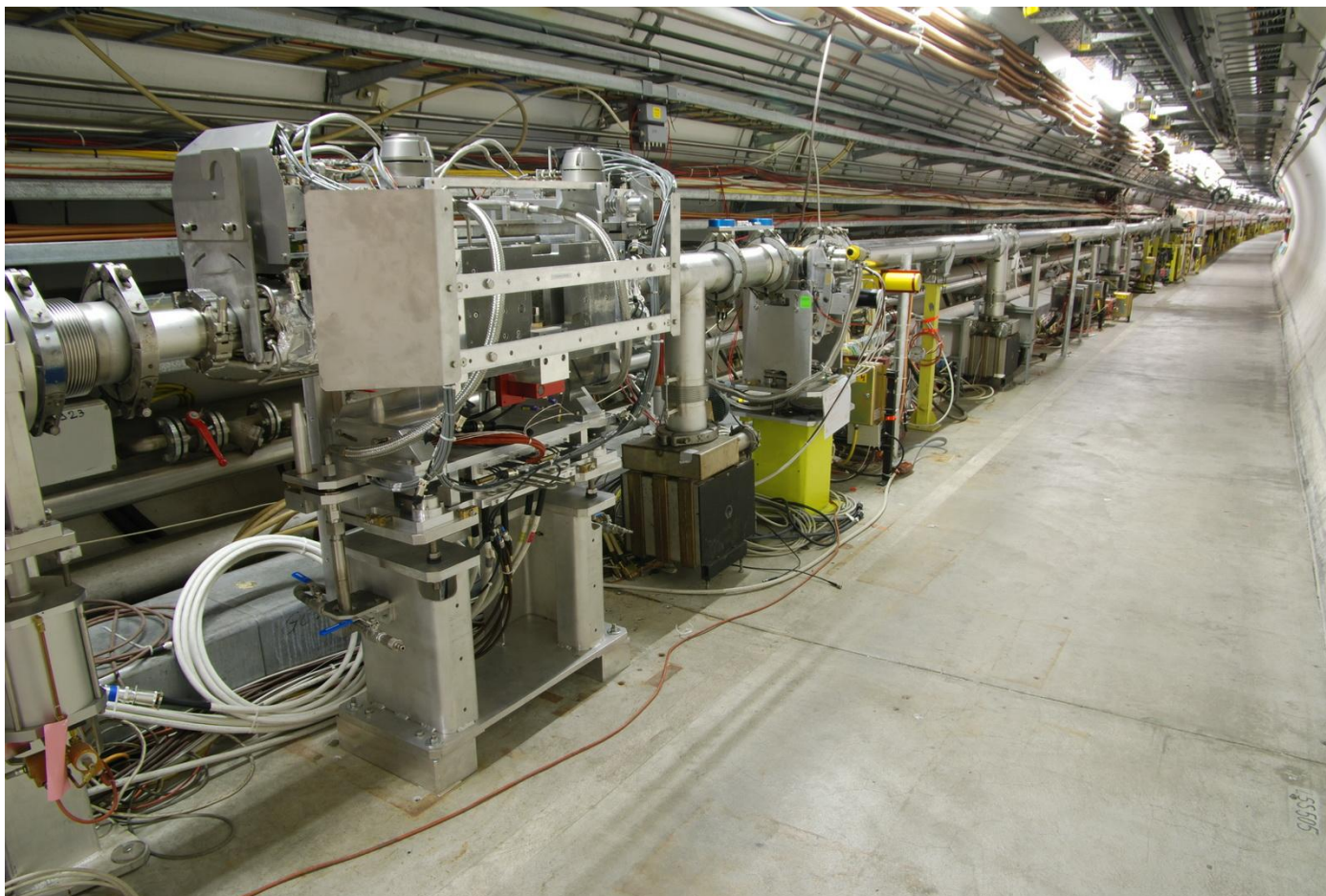


Two goniometer (crystal 1 and 2)  
One W scatterer  
One Cerekov detector



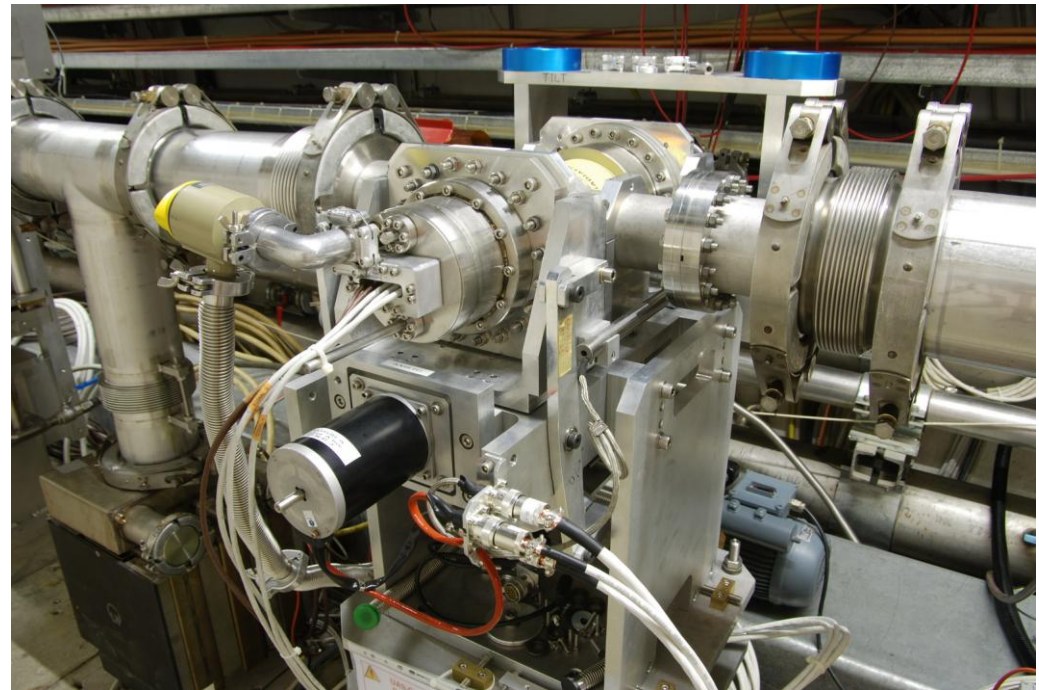
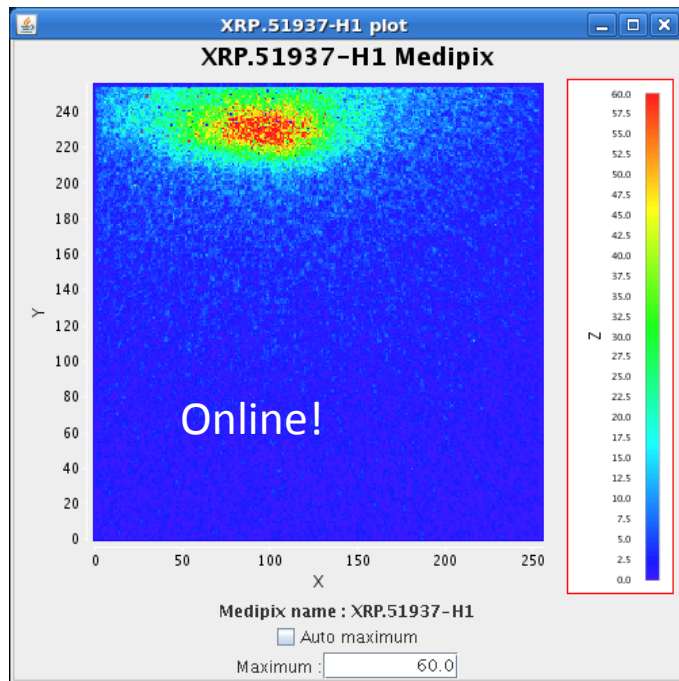
# LHC collimator (phase 2)

- Instrumented with LHC-type BLM



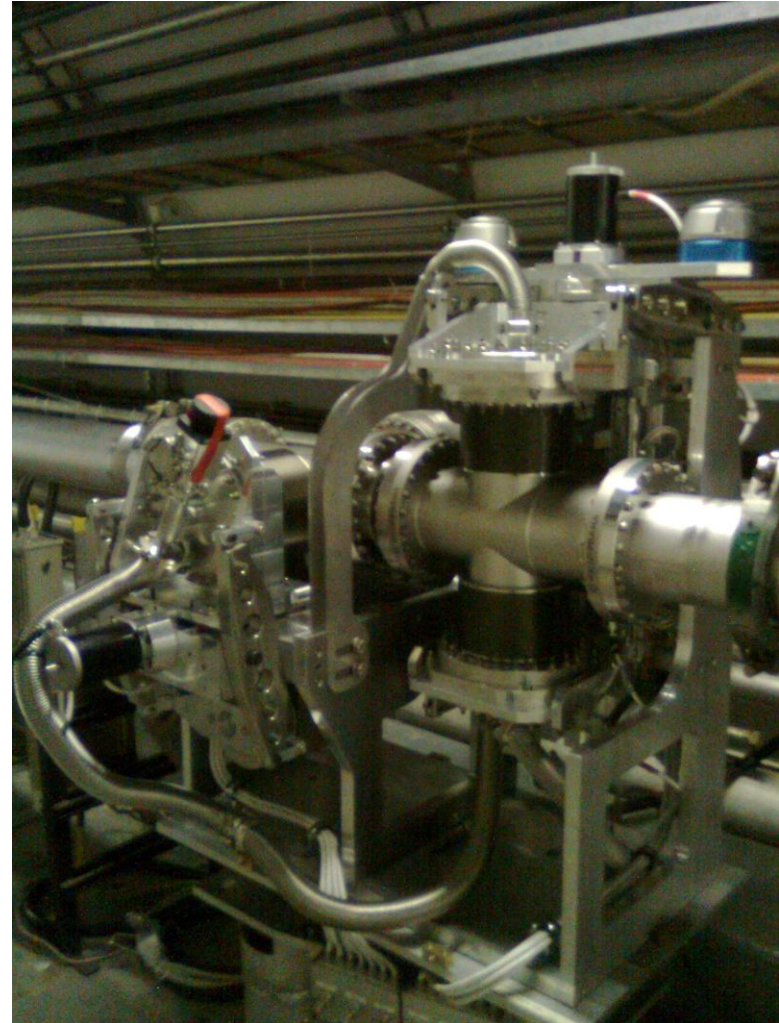


- Instrumented with Medipix on both horizontal pot



# Roman pot 2

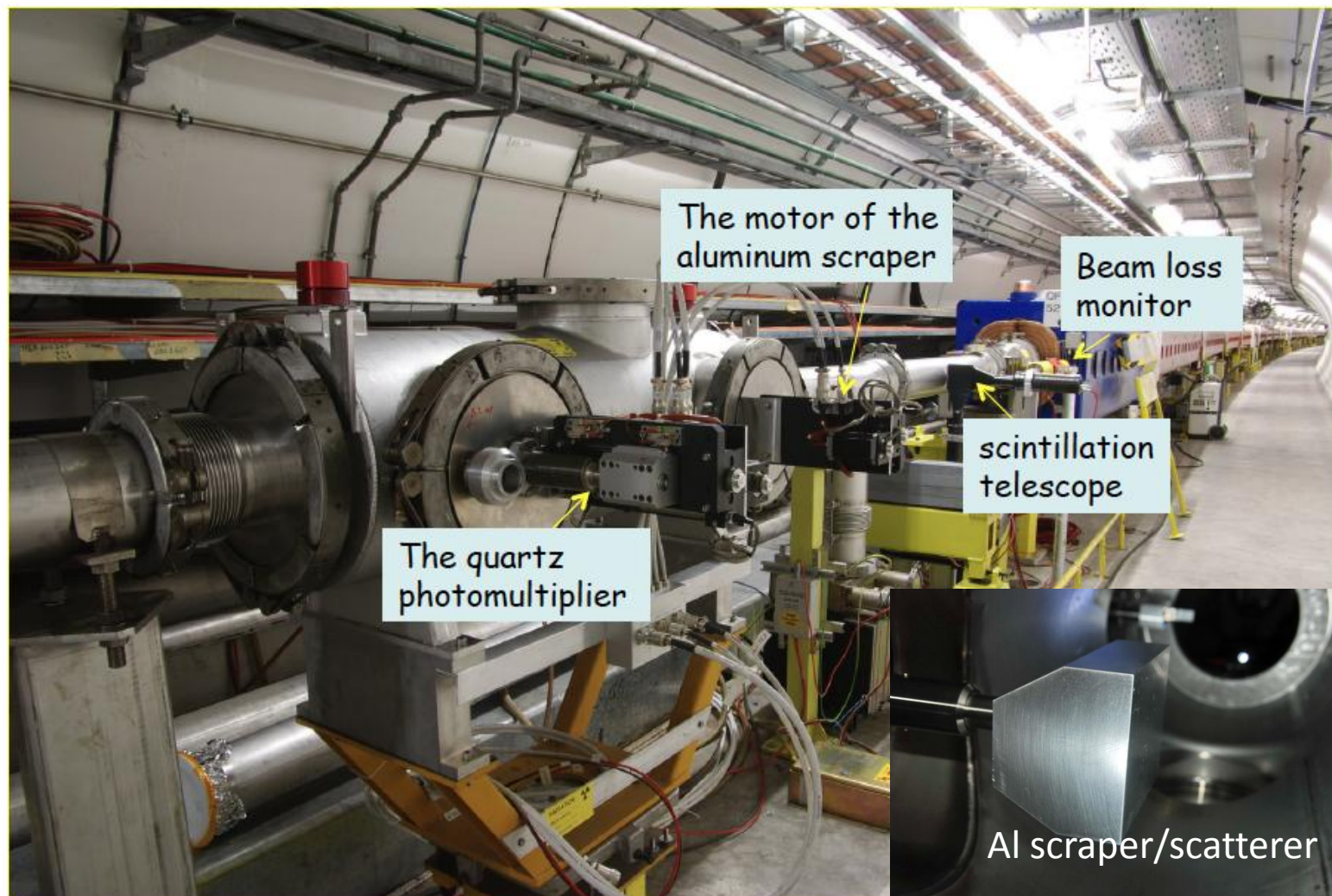
- Close to TAL, better place to see channeled beam
- No detectors yet
- 2 H and 2 V pots for Medipix
- Relevant to measure channeled beam direction (from centroid) and flux of proton of channeled beam







# TAL2 in missing magnet half-cell

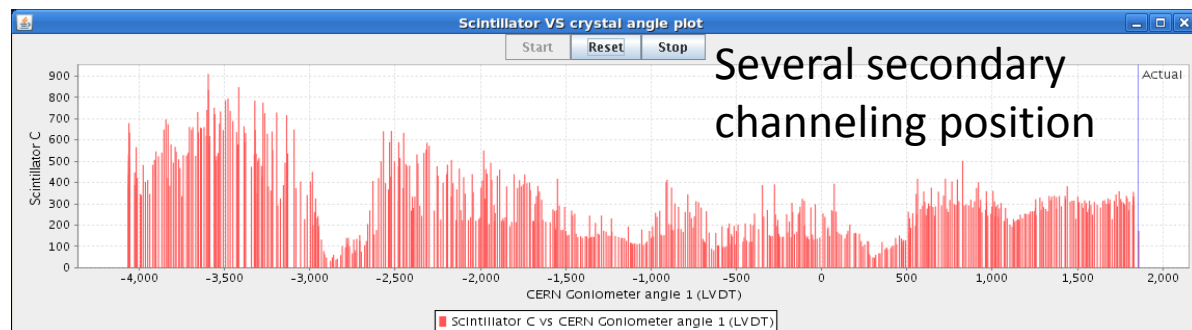
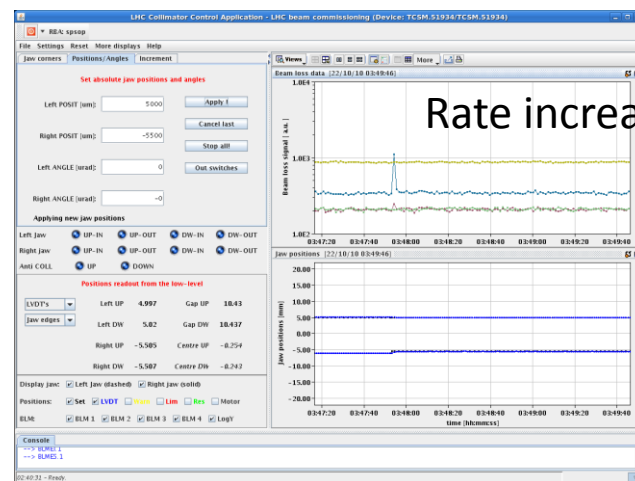




Crystal and all UA9 movable devices are aligned during each fill.

LHC collimation alignment

Now standard and fast procedure to find channeling configuration and collimation.



- UA9 layout is now well established
  - Need to instrument RP2 with 4 Medipix
  - Need to add our BLM scint close to SPS collimator
- Hardware and DAQ are working
  - No big failure but keep on eye on radiation damage of Medipix
- Many more details in the following talks

