# Injection Apertures in IP2 and IP8: VCTY Problem

- **Aperture problems in IP2 and IP8 at the recombination chambers VCTYB (IP2) and VCTYA (IP8)**
  - **Apertures of the chambers do not take into account the**
    - Non kicked injected beam
    - Kicked stored beam
  - **Initially noticed and followed up by Bernard Jeanneret**

- **Here only IP2 treated, problem is similar for IP8**
  - **Chamber IP8 is less complicated (type VCTYA instead VCTYB)**
- **BJ also signalled problems at the BPM chamber in front of D2**
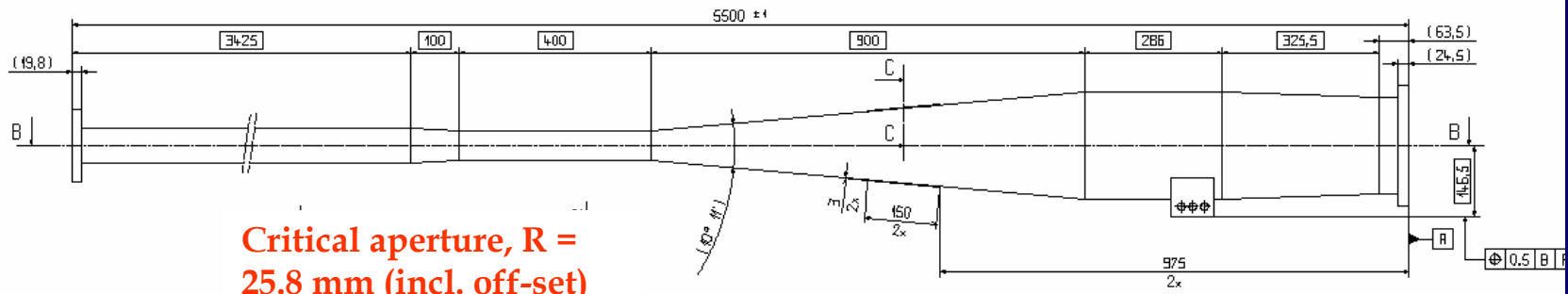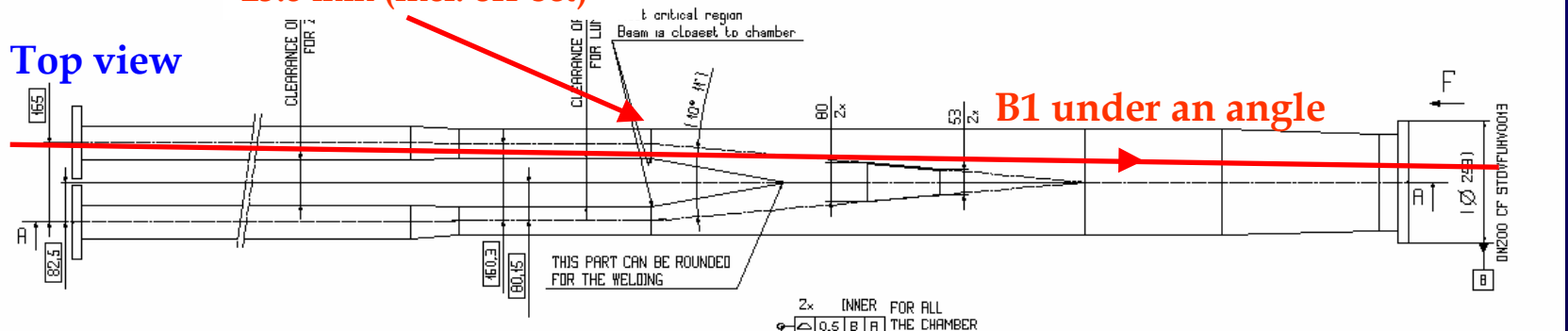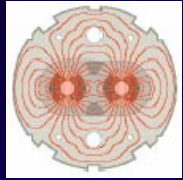 - **Also contacted BI to increase chamber diameter**

Layout IP2

Recombination chamber VCTYB
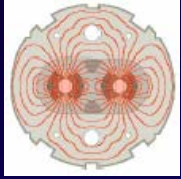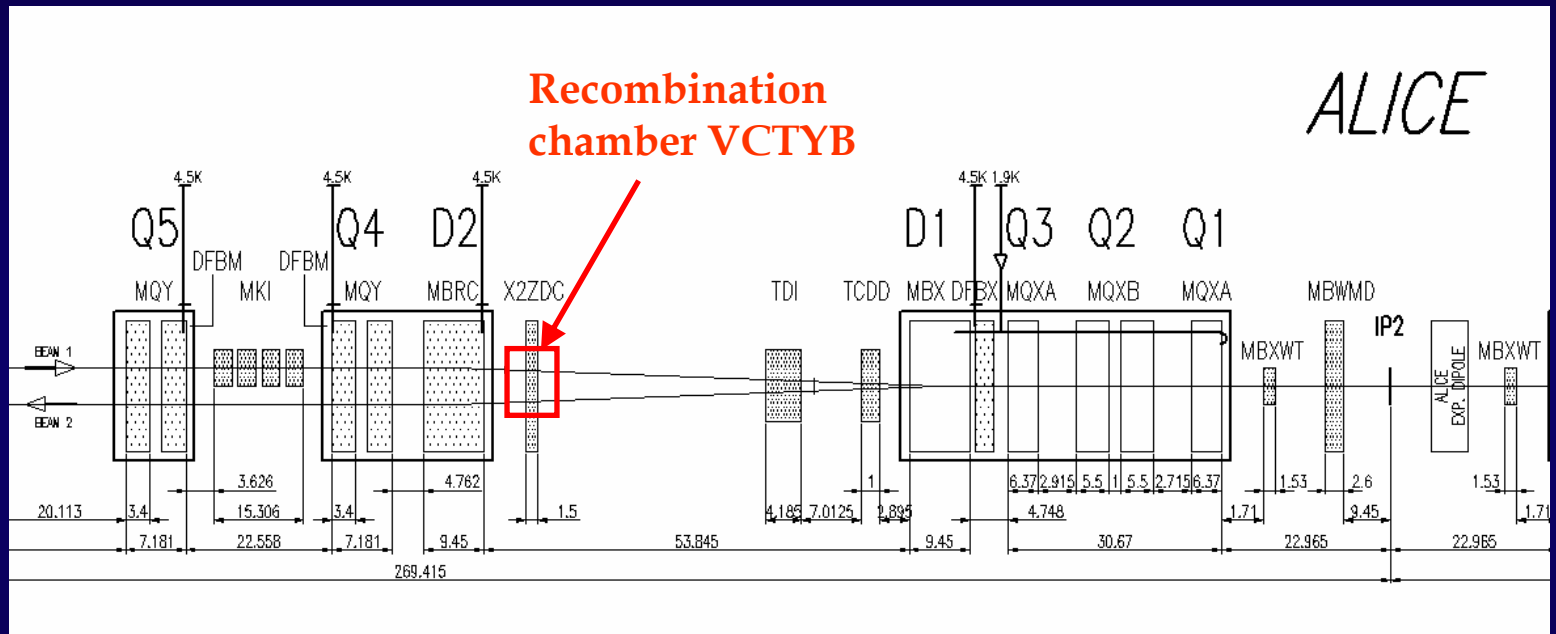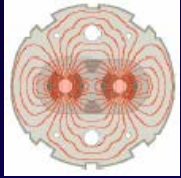
VCTYB chamber

Side view

Top view

Critical aperture, R = 25.8 mm (incl. off-set)

B1 under an angle

Apertures
For the Stored Beam
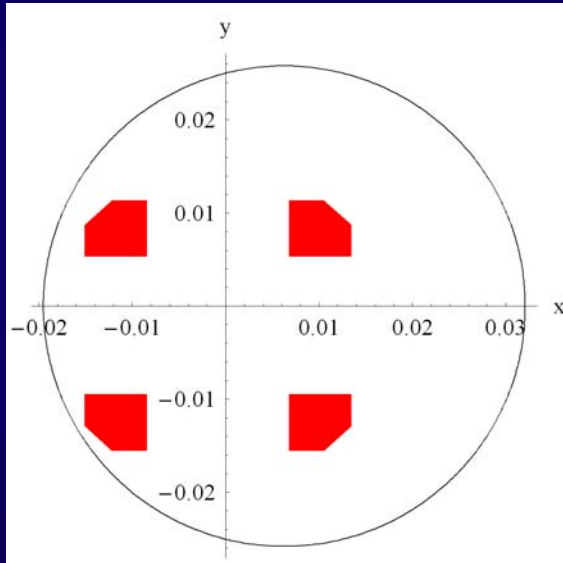
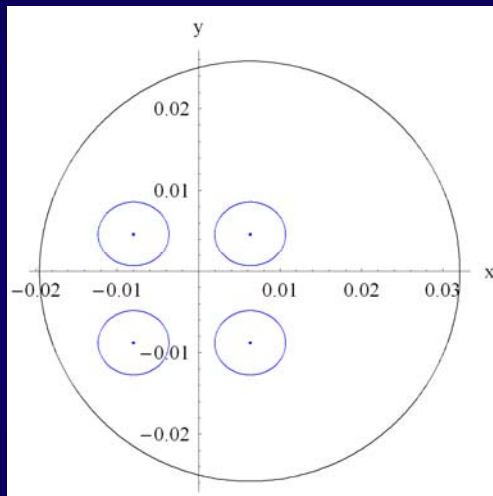Normally stored beam is ok.
Large effective off-set of vacuum
chamber rel. to the beam
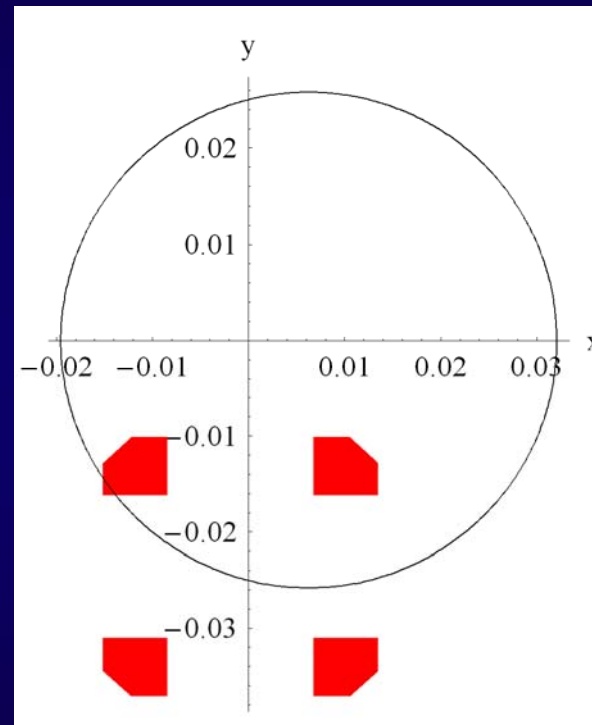
Stored beam kicked by injection
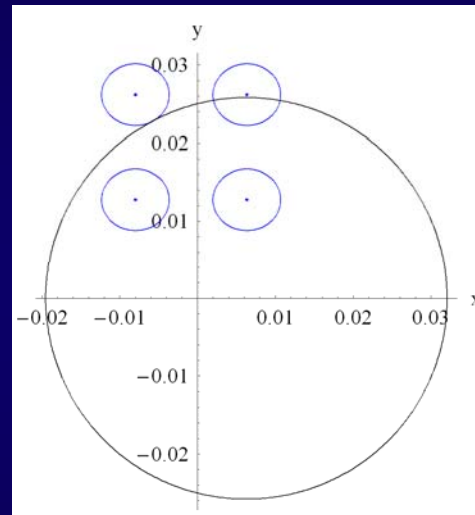kicker: missing aperture about
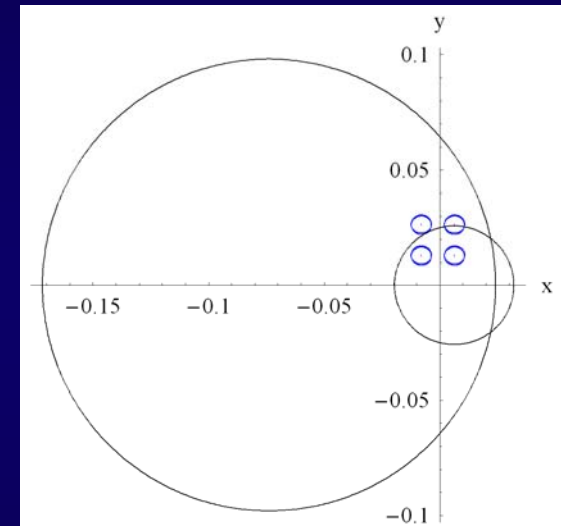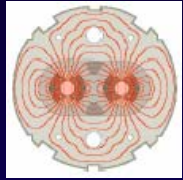15 mm
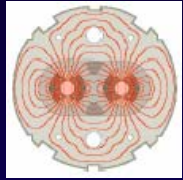
Injected Beam

Normally injected

Need to add 4 mm more vertical aperture if V-crossing changes sign

Injected, not kicked

Comparison chamber at critical position and larger chamber downstream
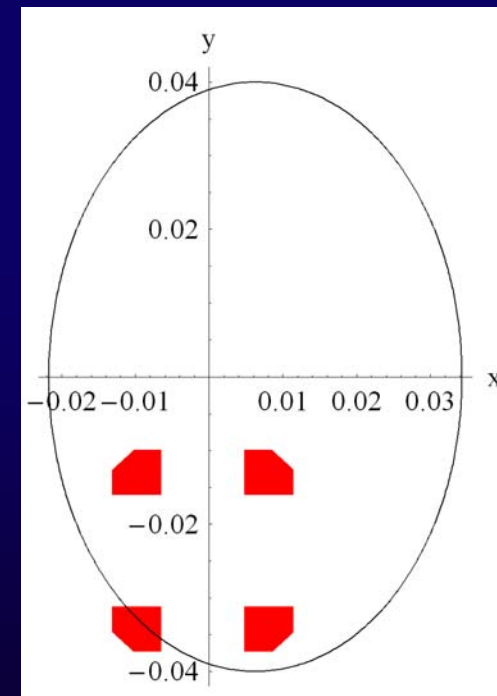
Modifications

◆ **BJ proposes two possible chambers, discussed with Christian Rathjen**

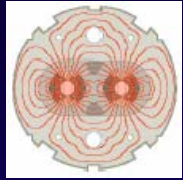   ◆ **Racetrack or ellipse**

    ◆ **28 x 38 or <u>28 x 40</u>**

Enlarged chamber ellipse of 28 mm x 40 mm, 2 mm closed orbit, n1 = 7 : still seems to be a bit tight.

Acceptable, or can it be a bit larger?
What is the constraint?

… check injected on different orbit…

Future Actions

- ◆ **Agree on VTCY chambers for IP2 and IP8 required**
  - ◆ **Approve mechanical drawings (ECR)**
- ◆ **Idem BPM chamber just after D2**
  - ◆ **D = 60 mm to D = 80 mm (on same ECR?)**
- ◆ **When can the modified chamber(s) be installed in IP2 and/or IP8? Before the 2007 LHC operation with beam?**
  - ◆ **Presentation LTC next Wednesday by JB, two supporting slides BT**
  - ◆ **Need to see the non-kicked injected beam on the BTV at the TDI for setting up injection**
  - ◆ **Can not risk to be limited in intensity due to damage limit of the VTCY chamber**
  - ◆ **Radiation hygiene: want to dump on TDI not on chamber**