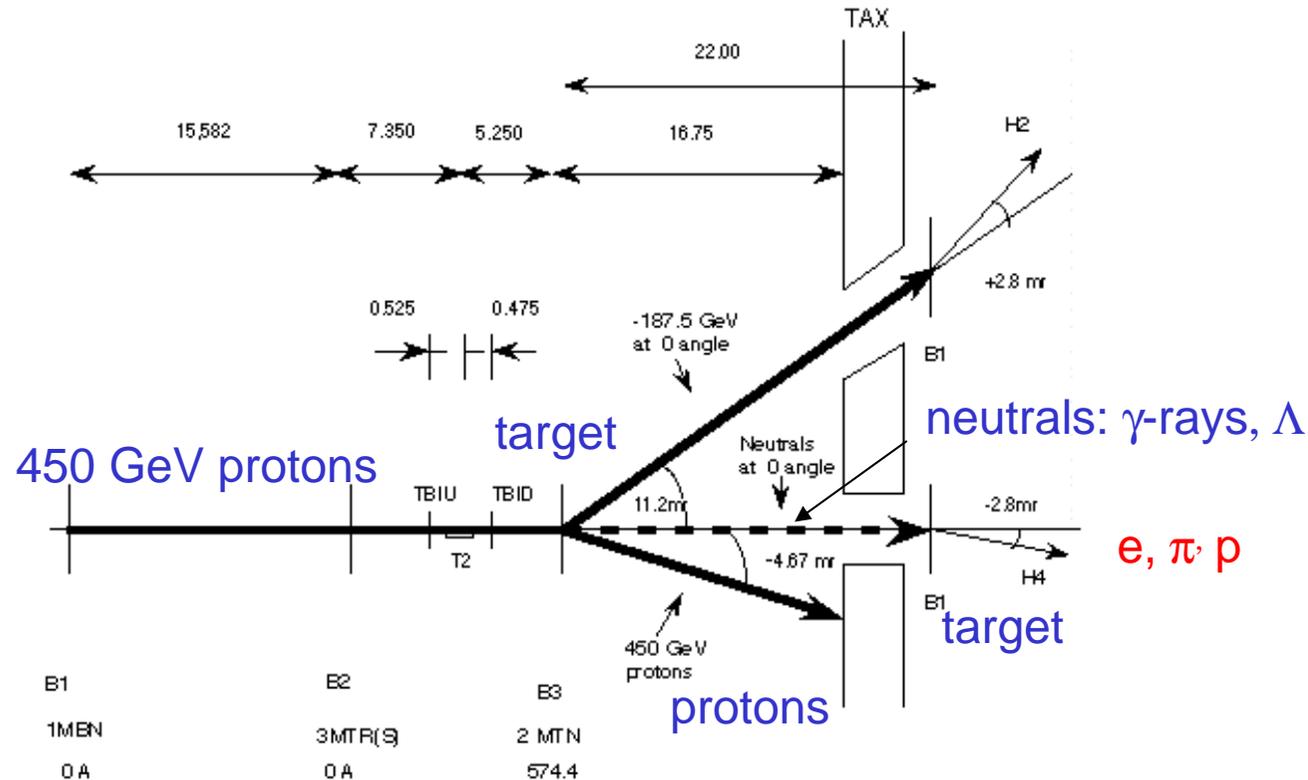


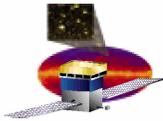
## “0 degree wobbling mode” or “0-mrad” mode

protons → neutral pions →  $\gamma$  rays → electrons

Contamination: pions+ protons from  $\Lambda \rightarrow \pi^{+/-} + p^{-/+}$

In dipole magnets, electrons lose energy via synchrotron emission, hadrons don't: separation by fine tuning the field





# Beams

**Rates:** most cases  $< 1\text{kHz}$ . A few runs with  $10\text{ kHz}$  at the most favorable energy ( $100\text{ GeV}$ ?): “no problem”  
Spill:  $5\text{ s} / 32\text{ s}$

The **0-mrad beam**:

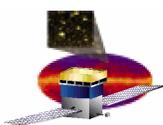
- **perfect for electrons:** highest energy, low contamination, rate high enough (as found in GLAST run in 2002):  $E > 100\text{ GeV}$ , contamination a few ‰
- possible use of **tertiary hadron beams** ( $E < 100\text{ GeV}$ ) if rate is high enough.  
Rates: enough, contamination a few ‰

**PID** (to get “pure” hadron beam)

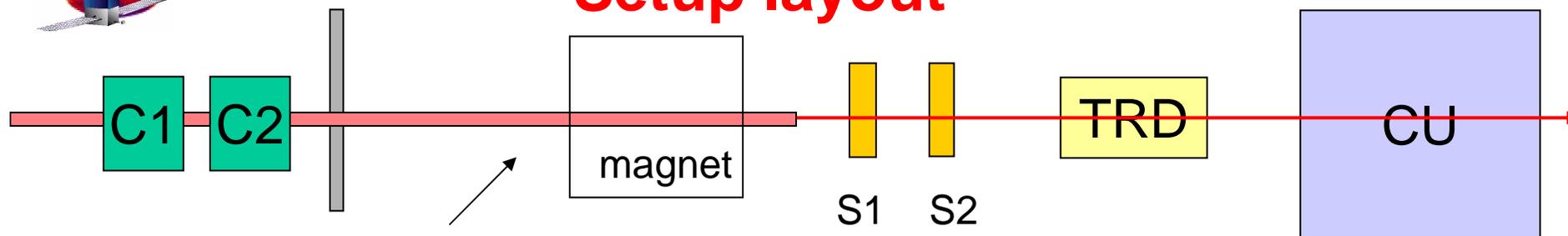
For secondary hadron beams at low energy, Cerenkov counters are needed  
Same gas as CMS: Max pressure:  $3\text{ bar}$  – Min pressure:  $100\text{ mbar}$

Low energy ( $E < 50\text{ GeV}$ ): pions

High energy ( $E > 100\text{ GeV}$ ): protons



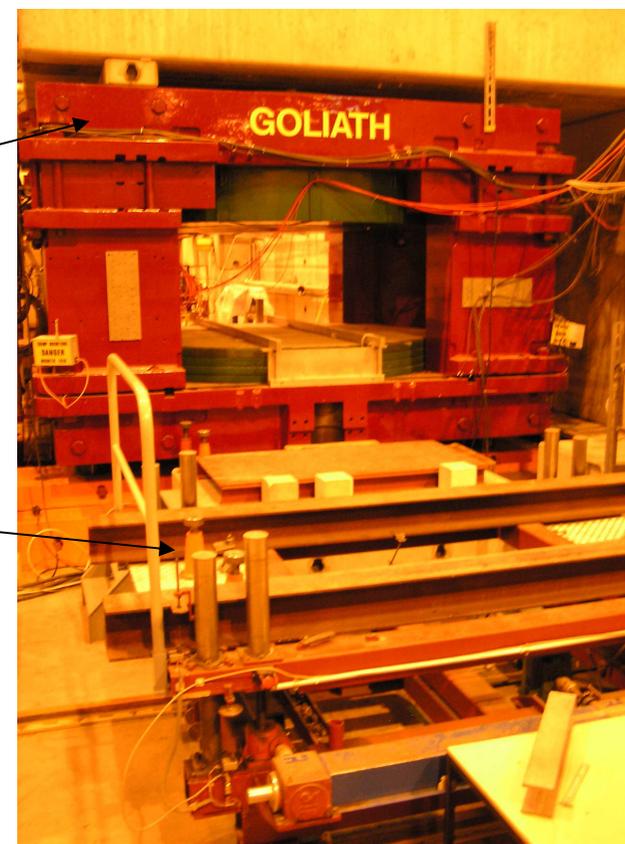
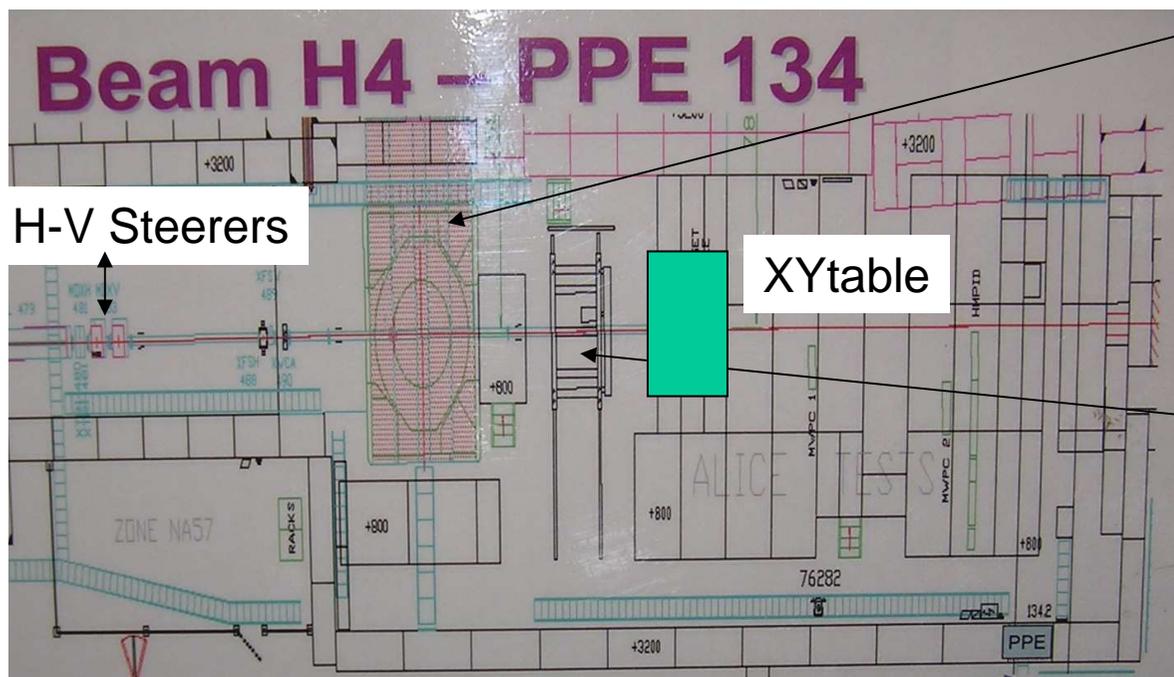
## Setup layout

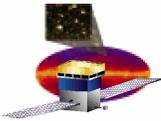


vacuum beam pipe may extend past the magnet

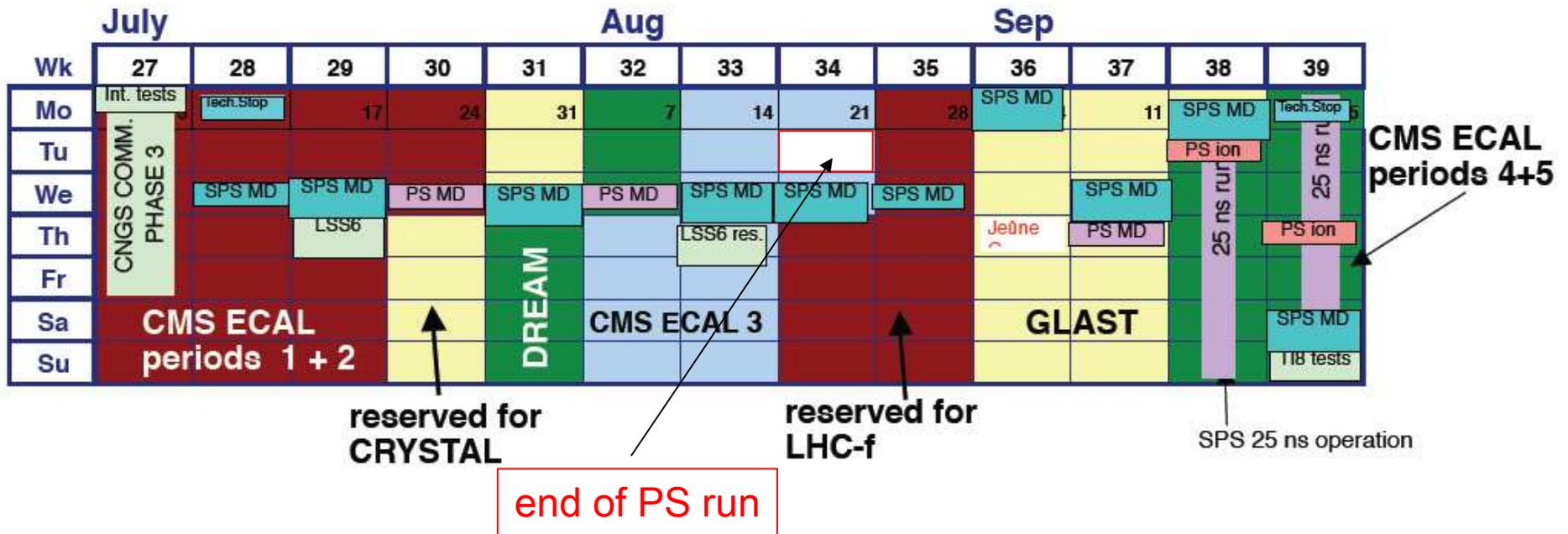
C1-C2: Cherenkov counters

S1-S2: trigger scintillators





# Planning



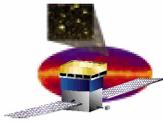
**Beam:** When do we know if there will be constraints on the beam due to H2 (CMS?)?

The 0-mrad setting should be available at all time (simpler).

**Installation:** - access to the cave: during machine development on Sept. 4  
(Aug.23, Aug.30)

**Barracks:** - Will the two barracks be available? Yes, 15 m long  
- When can we move in? out? Any time before, LHC-f is a small experiment  
Plenty of time to pack up.

**Storage between PS and SPS experiments:** in cave or enclosed areas



## Miscellaneous

### installation:

X-Y table: position with respect to magnet up to us  
cables between cave and barracks: how many? “a few”  
how long? about 30m  
ground in cave: via electric power (plugs)? ground is a problem  
what signals to the control room? “s1.s2”  
from the control room? Start of spill  
use of He bag? No, vaccum pipe

**safety:** course (when?, what?) level1-2-3, every day, 50 min long,  
security visit: when?, who?, what? before getting the beam  
film badges: need of medical certificate

**tunnel permit:** still possible? yes

**Name of responsible persons for:** safety  
crane+area  
surveyor