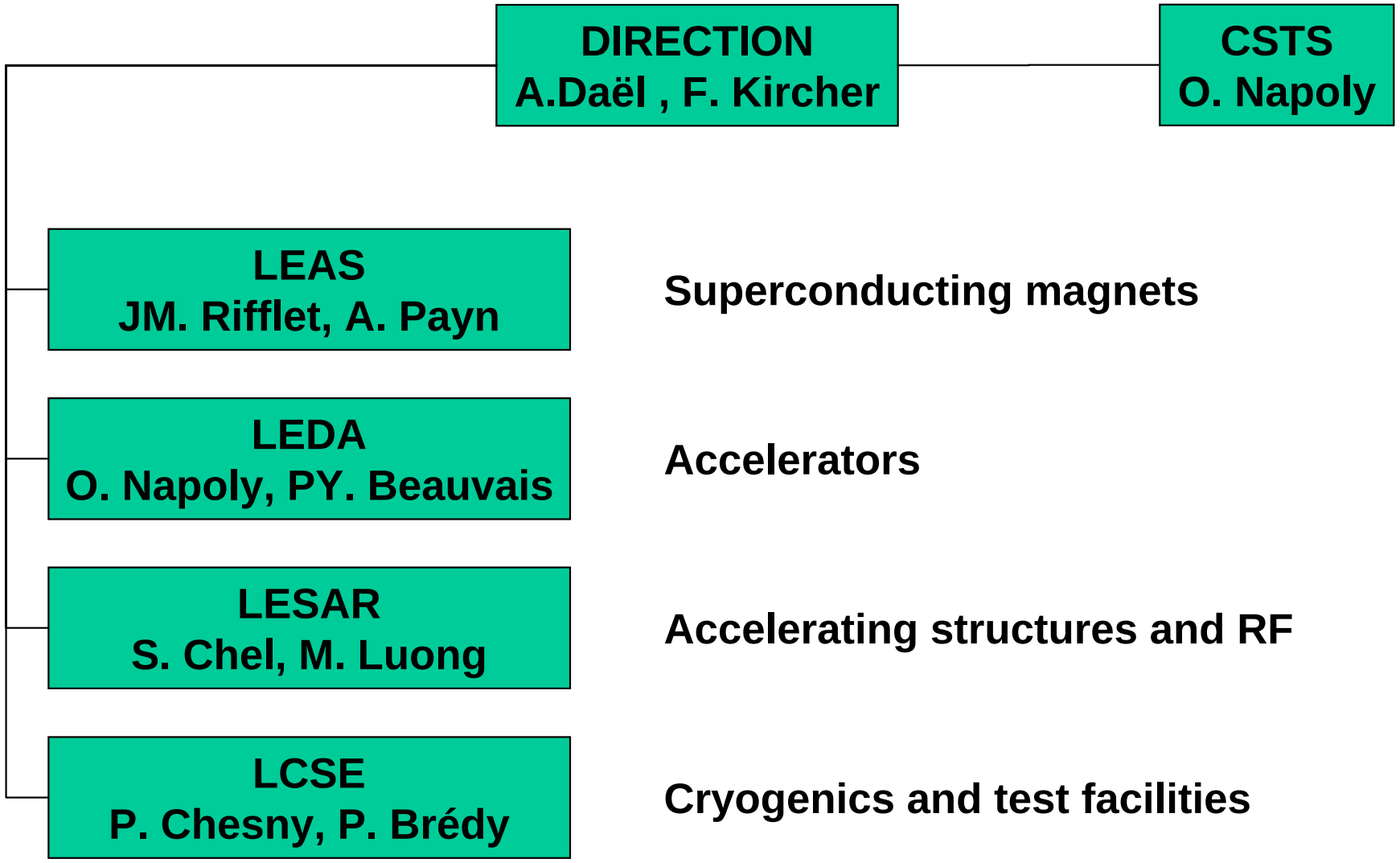
The SACM, Service des Accélérateurs, de la Cryogénie et du Magnétisme

(CEA Saclay/DSM/DAPNIA

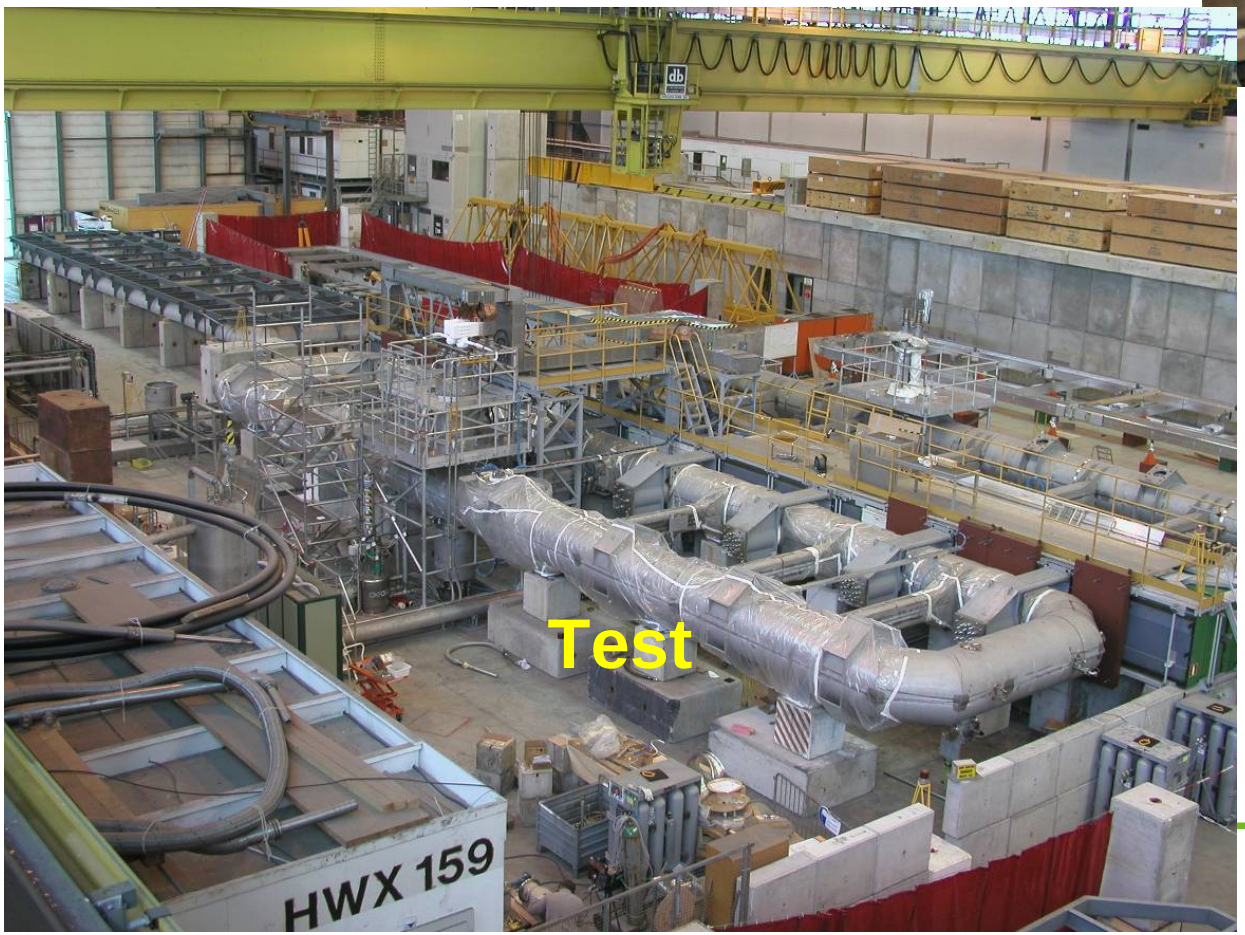
ORGANIZATION



ATLAS BARREL TOROID – TESTS OF COILS

Test of coils
CERN-DAPNIA-INFN

- Current increase in steps
- 22 000 A and slow discharge
- 22 000 A and fast discharge
- Keep 22 000 A for 10 hours



Status :
BT1 et BT2 tested
No quench

Objective :
3 coils tested by end 2004

ATLAS BARREL TOROID MAGNET

Design, production control, realization monitoring, coils assembly, surface tests

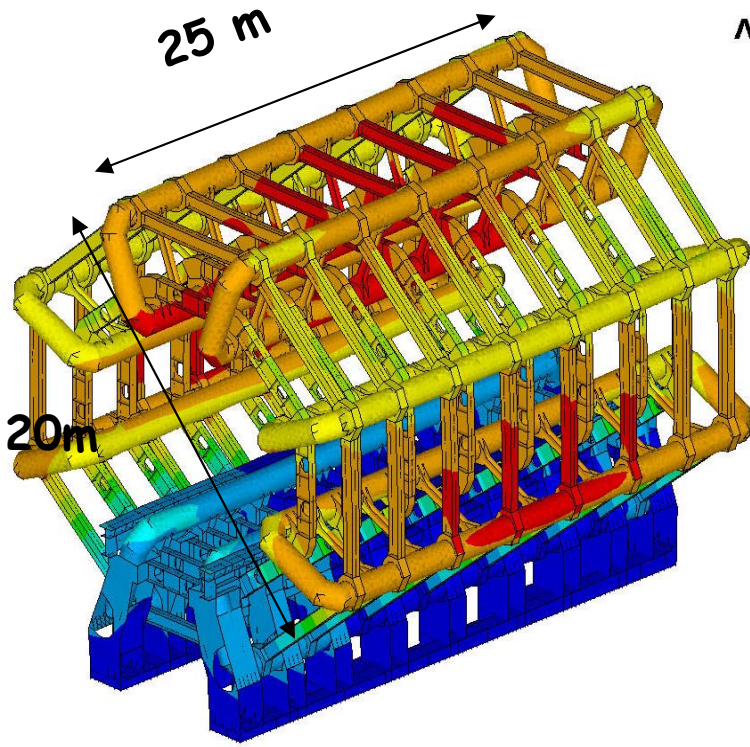
- **Additional in kind contribution to ATLAS : cryogenic ring**

Status :

- **Production finished (Ansaldo, Alstom/ABB, Zanon)**
- **Integration of coils in their support finished (Balke Duerr GMBH, CERN, Cosmi, Dapnia, Dubna, Technicatome)**
- **Cryostating of 3 cold masses done**
- **Surface tests : BT1&BT2 tested**

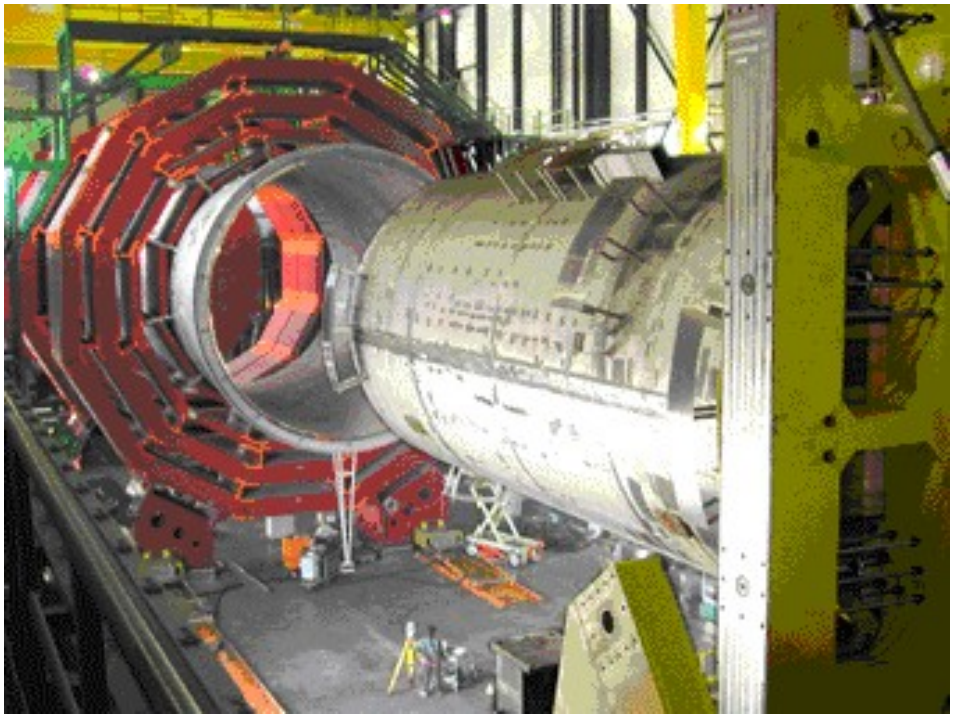
Planning :

- **April 2005 :**
  End of integration and cryostating
- **June 2005 :**
  End of surface tests
- **October 2005 :**
  Reception in the cavern
- **End 2005 :**
  All Cryoring sectors shipped to CERN



CMS TESTS

Tests of the insertion swiveling platform
July 2002



Planning :

End of surface assembly : **august 2005**
Tests : **autumn 2005**
Transfer into the cavern: **february 2006**

LHC QUADRUPOLES

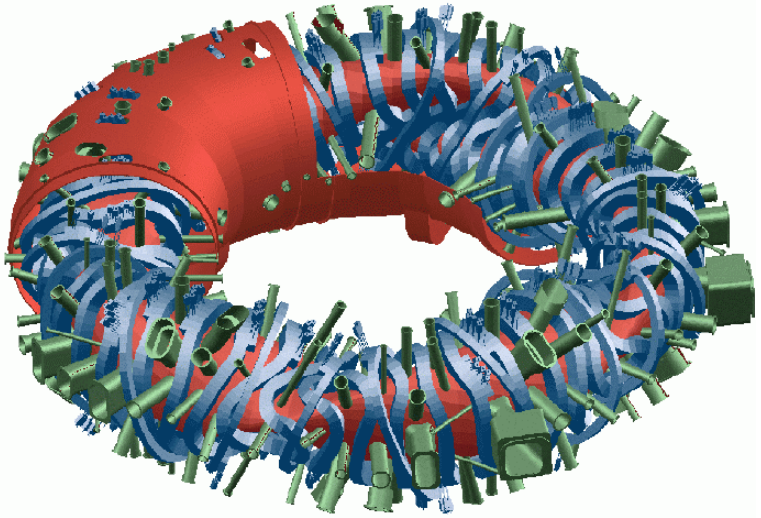
Agreement N° 1 CERN/CEA/CNRS for the LHC construction

- **Study of short straight sections cold masses**
- **Prototypes**
- **Technology transfer to industry (ACCEL) and monotoring of the production**
- **Cryostating at CERN**

3 prototypes built at Saclay

W7X

- W7X : Wendelstein stellarator
- European fusion program
- Lead by IPP Garching - Greifswald Max Planck Institut
- Dapnia responsibility : tests of 70 coils built by Noell (Germany), Ansaldo (Italy) and Tesla (UK)
- Test facility started operation in september 2001 with a prototype coil
- First production coil delivered in June 2003
- 8 Tests achieved :
- 3 planar (1 tested twice), 4 non planar
- Planning : coil delivery interrupted till february 2005 – tests until end 2007



W7X TEST FACILITY

Helium refrigerator

Power : 200 W @ 4.2 K

Cryostats dimensions :

height ≈ 4m

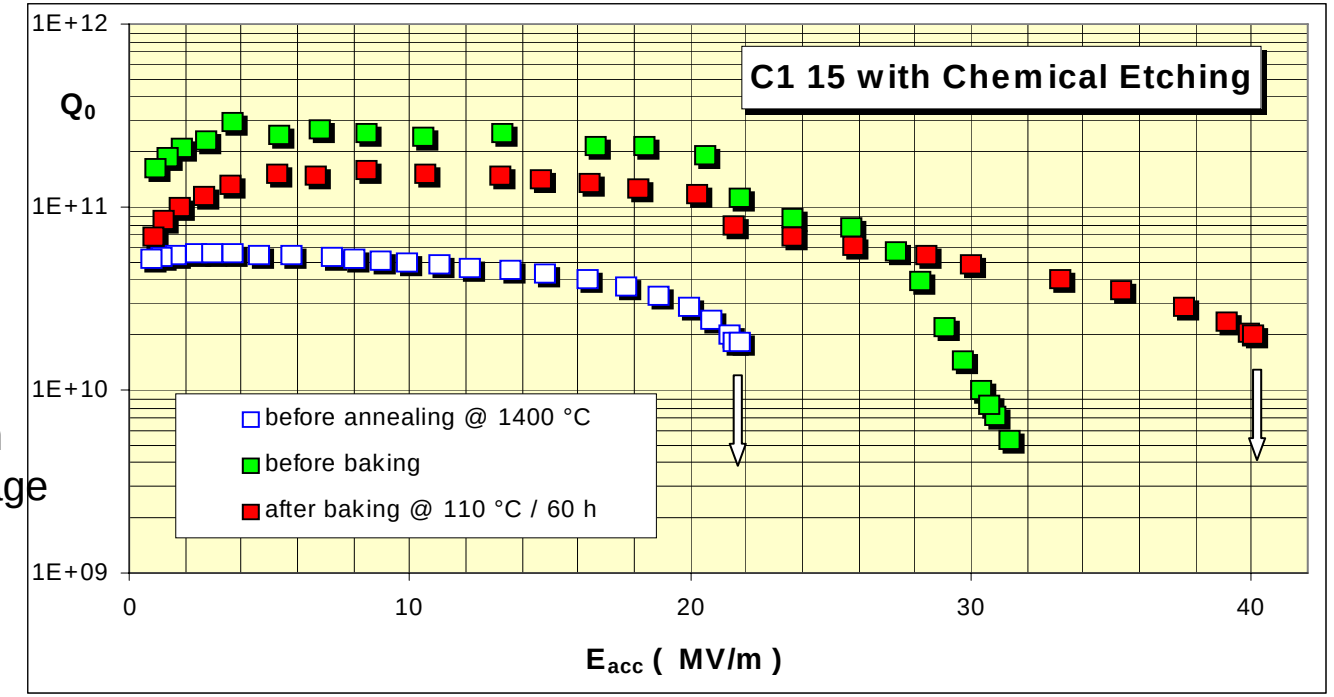
diameter ≈ 5 m

Operation parameters :

Supercritical helium : 4.8 K → 7.5 K @ 6 bar
Flow rate : 15 g/s @ 4.2 k
Max.current : 25 kA

R&D cavités supraconductrices

- traitements thermiques pour éliminer l'hydrogène et l'oxygène
  (purification du matériau)
- traitement chimique de la surface
  (décapage par bain chimique ou électropolissage)
- rinçage à haute pression et conditionnement en salle blanche
  (élimination des poussières)



Jusqu'à présent champs de 40 MV/m accessibles uniquement avec polissage électrochimique

nouvelles chimies

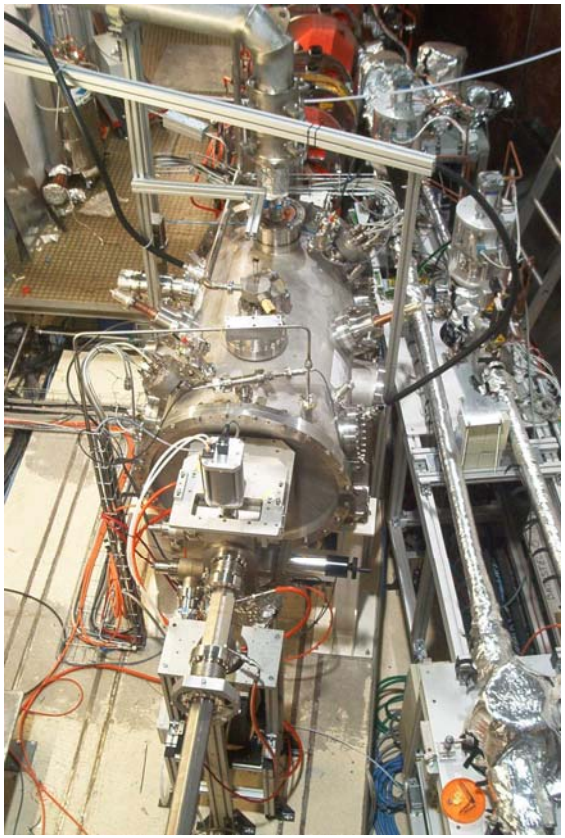
SUPER3HC : results

first harmonic cavities installed on synchrotron light machines

stable operation @ 400 mA
suppression of longitudinal instabilities
beam lifetime x 2.2

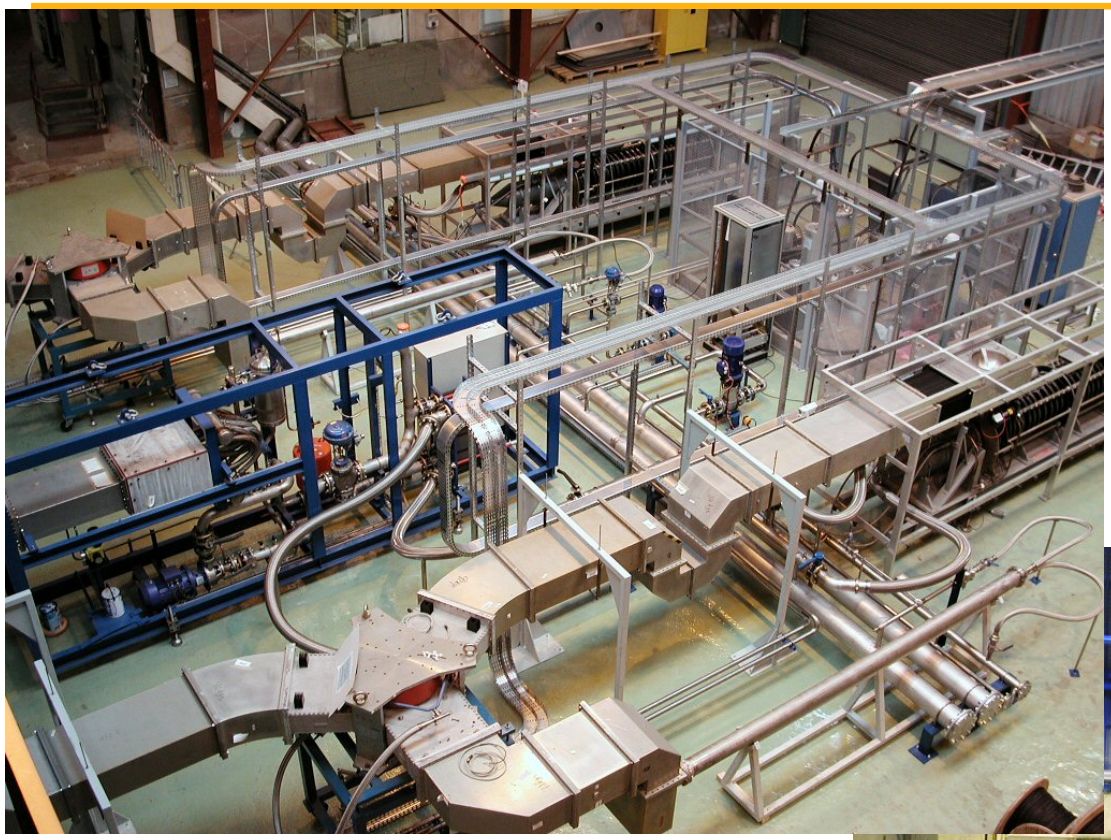
Cryomodule SLS

suppression of all longitudinal instabilities @ 2.0 GeV - 320mA
beam lifetime x 3.5



Cryomodule ELETTRA

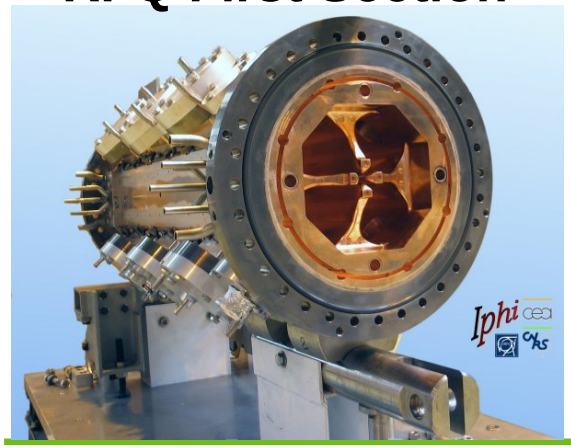
IPHI : installation



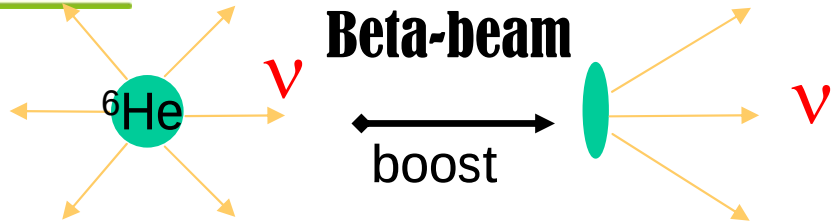
Klystrons and wave guides

Radiological protection

RFQ First Section



“Beta-beams” de basse énergie



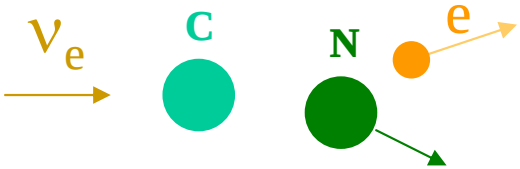
C. Volpe, hep-ph/0303222.

LA PROPOSITION

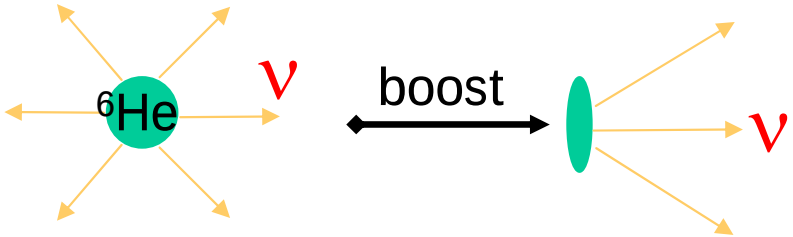
Utiliser le concept des “beta-beam” pour produire des faisceaux intenses et purs de neutrinos de basse énergie.

POTENTIALITÉS

→ Étude des réactions neutrino-noyau



→ Propriétés des neutrinos.



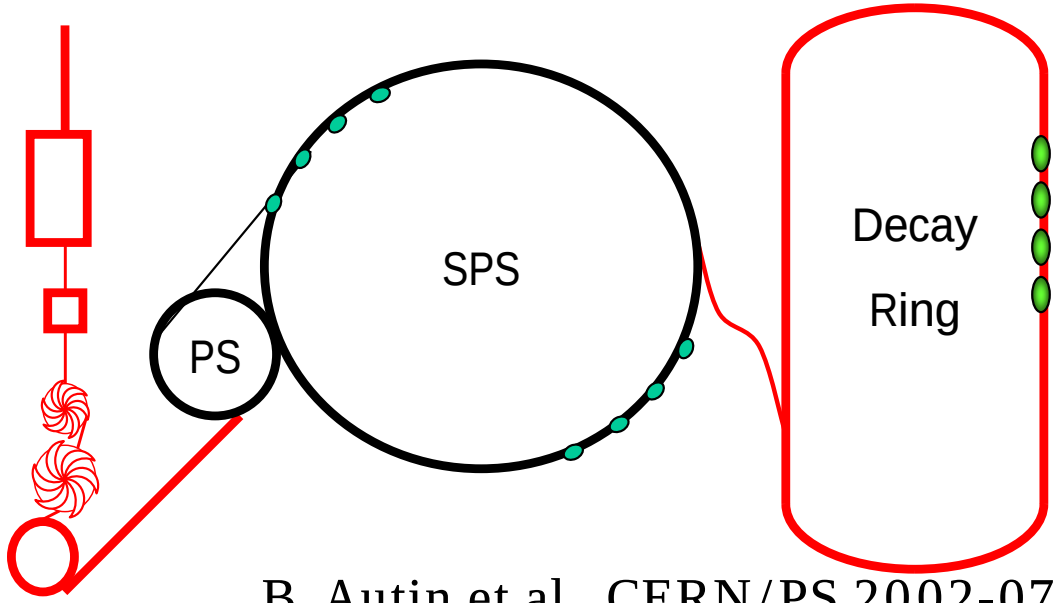
"Beta-beam" :

Une nouvelle méthode pour la production de faisceau ν.

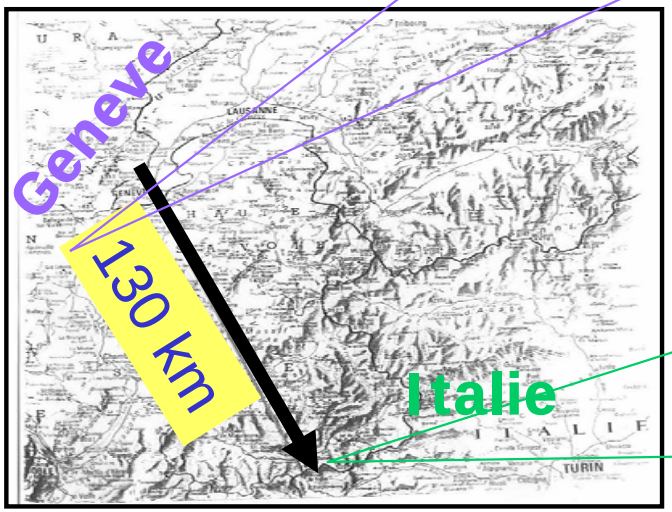
P. Zucchelli, PLB 2002

Le projet "Beta-beam" au CERN

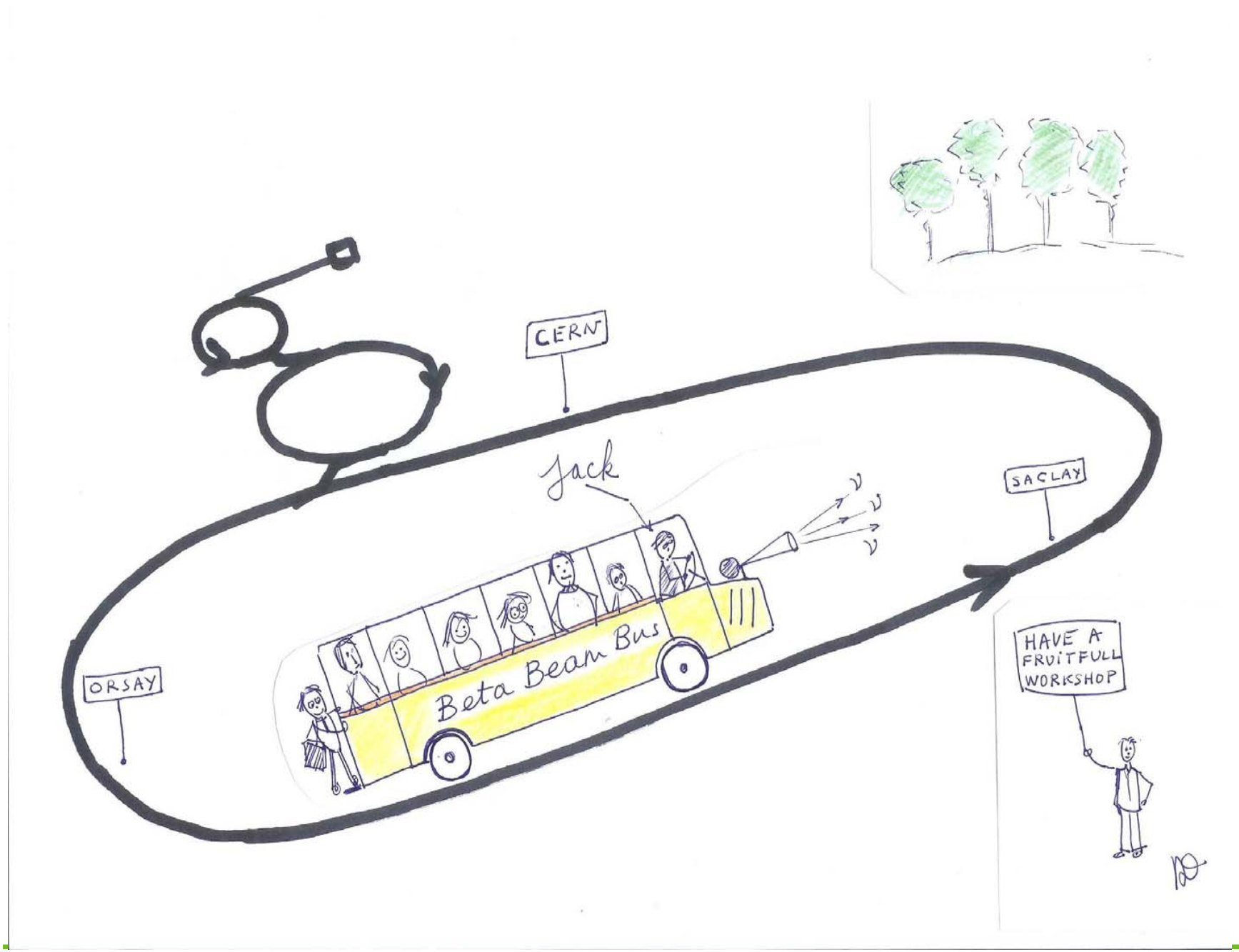
EURISOL



B. Autin et al., CERN/PS 2002-078.



UNO


CERN
Jack
SACLAY
ORSAY
Beta Beam Bus
HAVE A FRUITFULL WORKSHOP