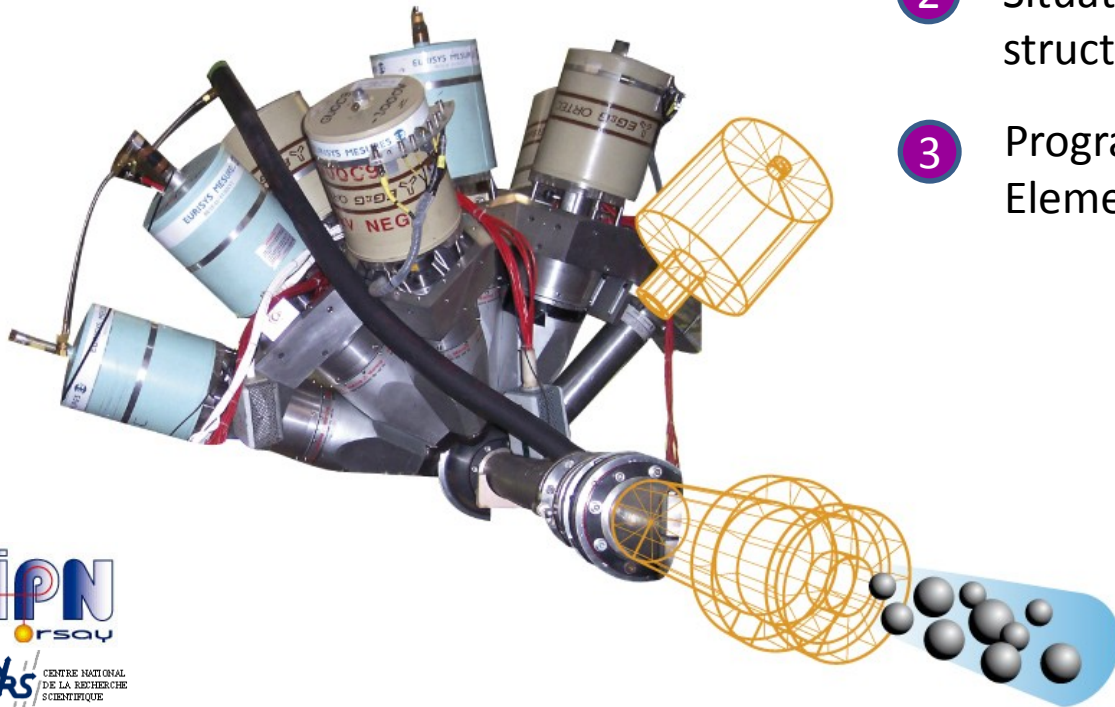




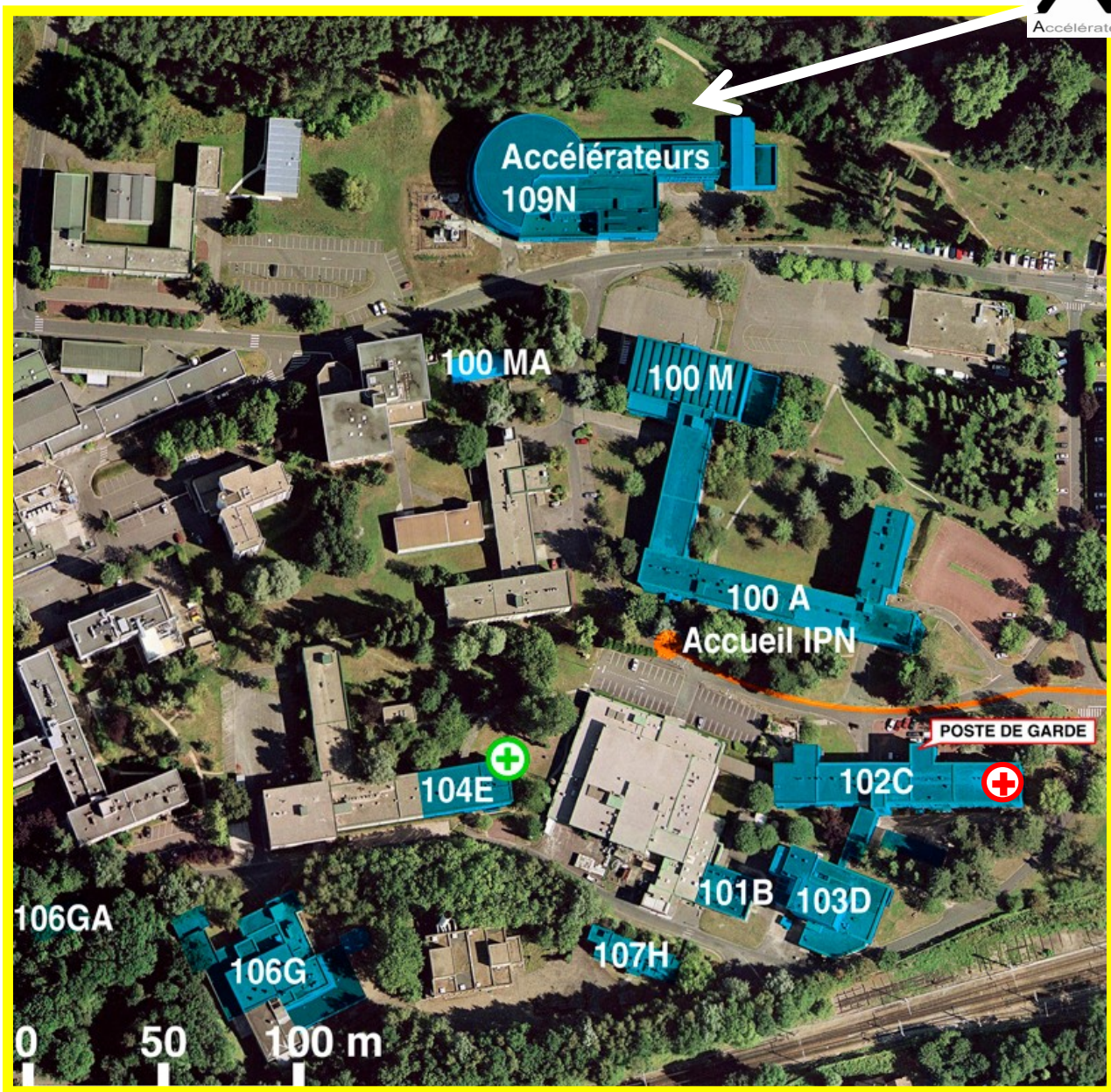
## ORGAM (ORsay GAMma array)

Project for a Ge array at the  facility

- 1 Historical scientific local/european context of the creation of ORGAM
- 2 Situation of ORGAM in the ALTO structure
- 3 Program for the two coming years and Elements on the physics case



**L**inear  
**A**ccelerator  
and  
**T**andem  
at **O**rsay



ALTO LINAC (formerly 1<sup>st</sup> section of the LEP injector) :  
 10 $\mu$ A, 50 MeV electrons

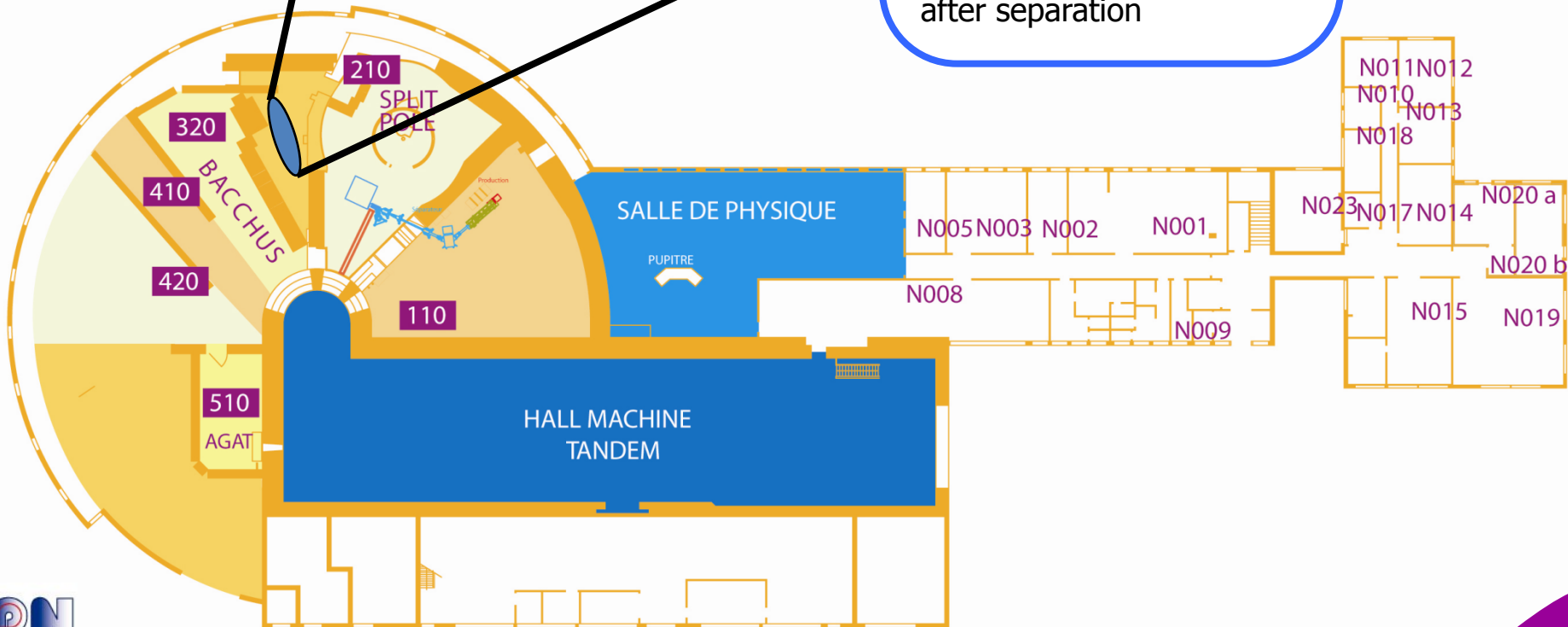
factor 100 in comparison  
 with deuterons

$$10^{11-4} \cdot 10^{11}$$

fissions per second

$$3 \cdot 10^7 - 10^8 \text{ } ^{132}\text{Sn}$$

after separation



2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

exploratory experiment at CERN

arrival of the cavity

construction of the LINAC bunker

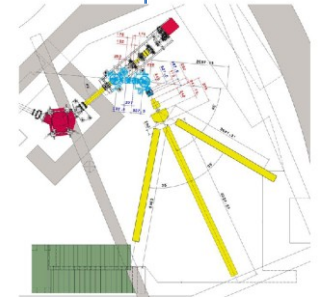
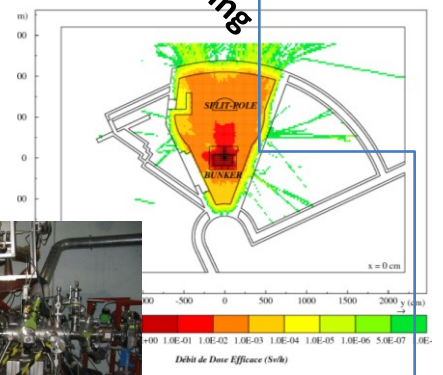
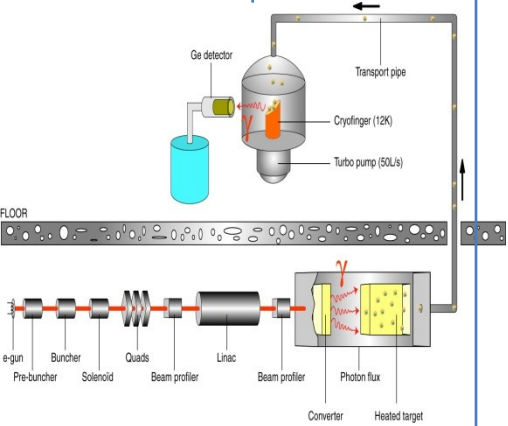
RF system extracted

First e-beam

electron-beam on the target ion source ensemble

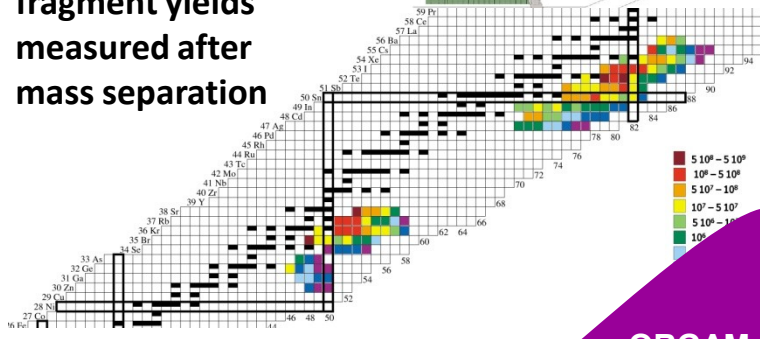
building of the low energy beam lines  
commissioning

Exploitation

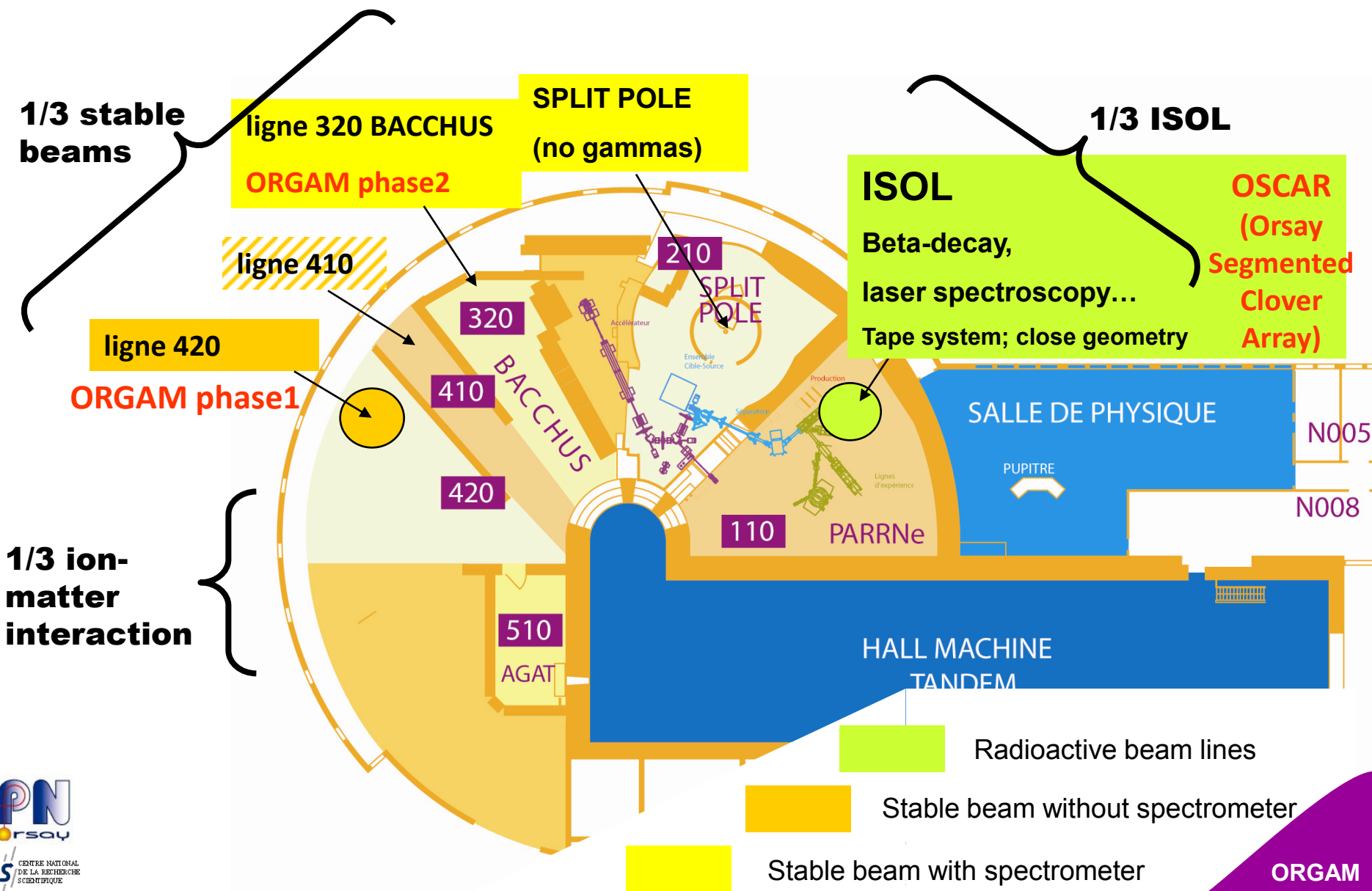


Premier faisceau :  
Le coeur d'ALTO commence à battre !...

2006 : fission fragment yields measured after mass separation



IN2P3  
INSTITUT NATIONAL DE PHYSIQUE NUCLEAIRE  
ET DE PHYSIQUE DES PARTICULES



# a hybrid facility ....a versatile array

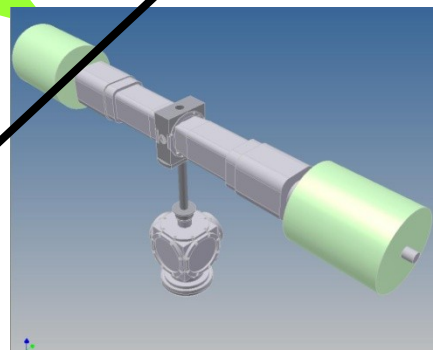
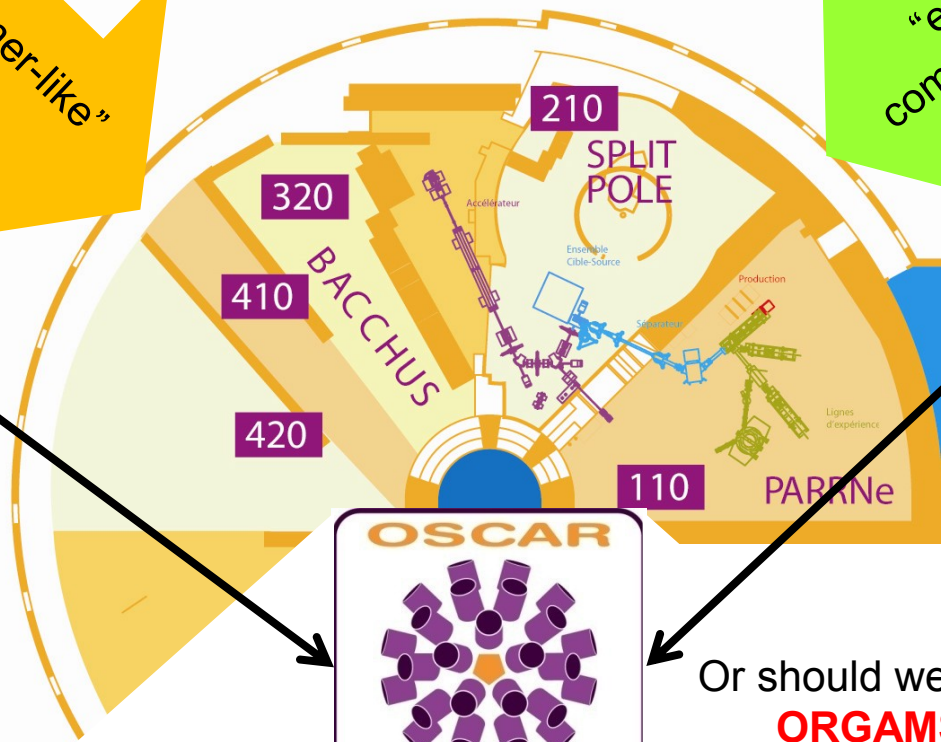
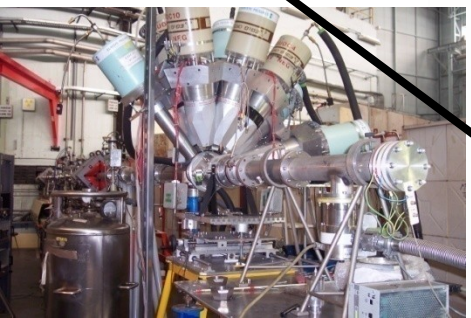
Scientific Manager :  
Fadi IBRAHIM

Technical Manager :  
Saïd ESSABAA

↓  
Somebody in charge of the detection  
resources for all this (me)

“stable beam/high spinner-like”  
community of users  
**ORGAM**  
(ORsay  
GAMma  
array)

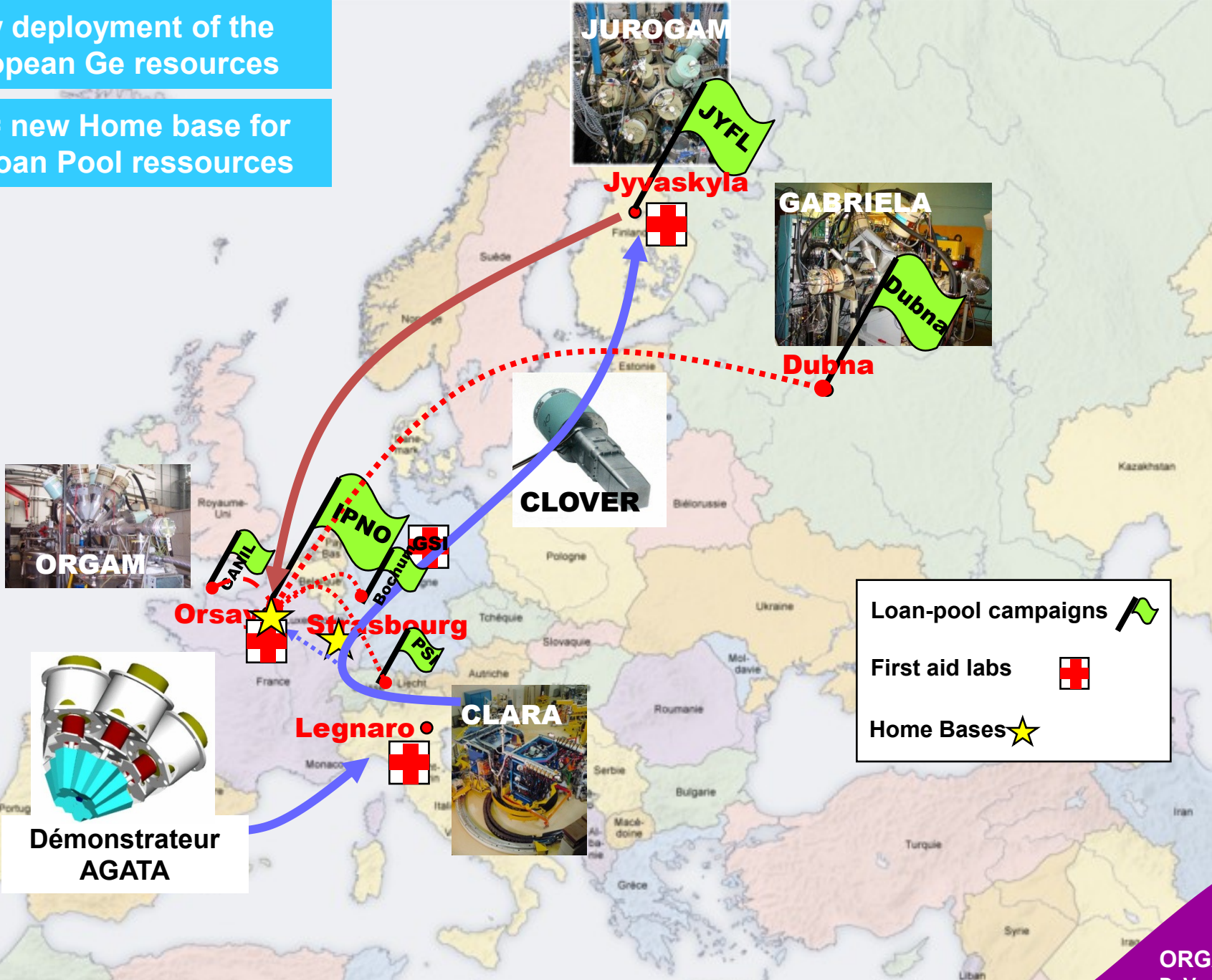
“exotic-like”  
community of users  
**OSCAR**  
(Orsay  
Segmented  
Clover  
Array)



Or should we call it the  
**ORGAMS** ???  
**ORsay GAMma arrayS**

# New deployment of the European Ge resources

IPN = new Home base for the Loan Pool resources



Official request to:



loan-pool  
gamma-pool

Same geometry as  
**EUROGAM** (and **JUROGAM 1**)

**ORGAM** campaign time schedule →



The Orsay Gamma array project (ORGAM)



Institut de Physique Nucléaire d'Orsay  
IN2P3-CNRS - Université Paris Sud-XI  
Orsay Campus - 15 rue Georges Clemenceau  
91406 Orsay Cedex - France  
Version 1 - 28-Jan-08

↑  
**ORGAM** document

Year	period	Line	Installation capacity (in nb of Ge+AC)	Possible origin of the detectors	Campaign Nb of detectors	Mechanical frame (nb of flanges)	Associated improvement
2008	Jun-Dec	420	24	Ge: 21 g-pool, 3 L-pool AC: 15 g-pool, 9 L-pool	Phase I <b>24</b>	24 Orsay	Local production of 10 frame flanges
		320	0	-	no	35 EUROGAM	Construction of the mechanical support
2009	Jan-Jun	420	24	Ge: 21 g-pool, 3 L-pool AC: 15 g-pool, 9 L-pool	Phase I <b>24</b>	24 Orsay	
		320	35	OSCAR or punctual borrowing from line 420	Phase I few	35 EUROGAM	LN2 transfer line to 320
	Jul-Dec	420	24	OSCAR or punctual borrowing from line 420	Phase I few	24 Orsay	
		320	35	Ge: 21 g-pool, 3 L-pool AC: 15 g-pool, 9 L-pool Possible extension of the loan: Ge: 21 g-pool, 14 L-pool AC: 15 g-pool, 10 L-pool	Phase I <b>24-35</b>	35 EUROGAM	
2010	Jan-Dec	320	36	Ge: N>26 g-pool, (36-N) L-pool AC: 36 g-pool, 0 L-pool	Phase I <b>36</b>	45 EUROGAM	36=max channel number of the present triggerless DAQ
2011	Jan-Dec	320	45	g-pool + L-pool all EUROGAM ressources	Phase I <b>45</b>	45 EUROGAM	New DAQ





# ORGAM year 2009 : physics on line 420

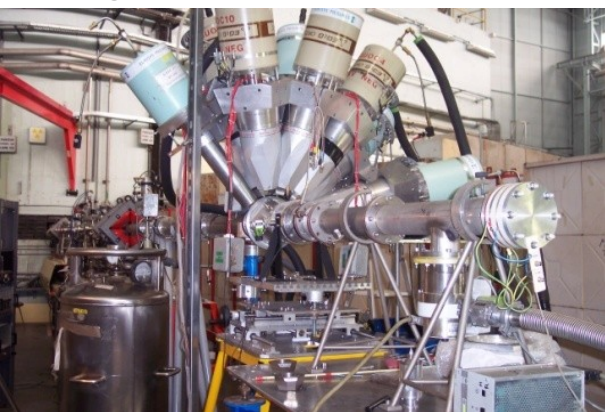
➔ Continuation of the present program

- g-factor measurements
- Study of properties of nuclei of astrophysical interest
- rare beams + "N-rich" targets :  $^{14}\text{C}$ ,  $^{48}\text{Ca}$ ,  $^{82}\text{Se}$  etc
- cluster structures
- tetrahedral nuclei
- High spin isomers

which, by the way, is **not** a program : it simply follows the demands at the ALTO PAC (explicit scientific politics of the only owner of the beam time : DGM)

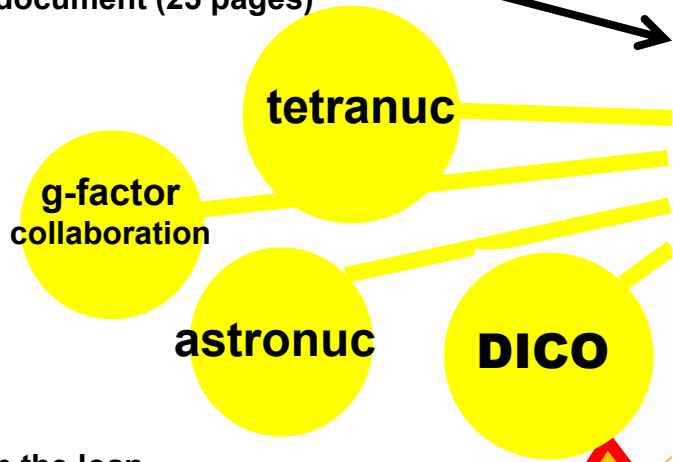
Next PAC 19<sup>th</sup> june (same day as the expected arrival of the Phase 1 from Jyvaskyla!)

Physics case and letters of intent : see the ORGAM document (25 pages)



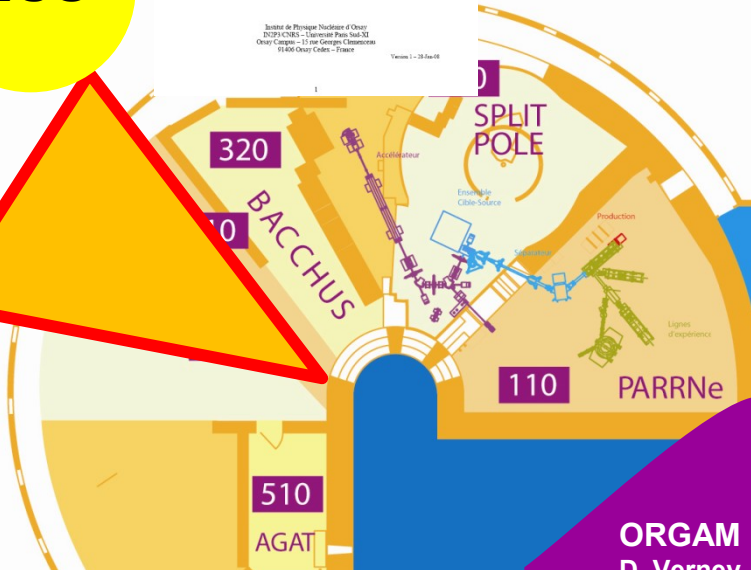
Originally based on  $\approx 10$  Coax Type I from the loan-pool

Sometimes completed with CLOVERS from OSCAR or elsewhere (GSI)...

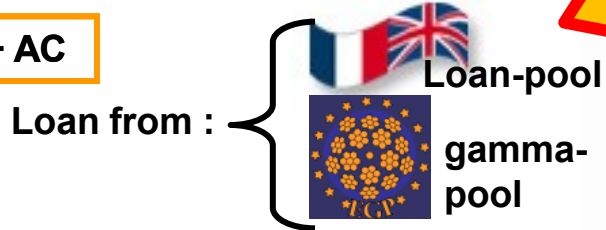


Paisley  
Debrecen  
Buenos-Aires  
Krakow  
Kolkata

Institut de Physique Nucléaire d'Orsay  
IN2P3-CNRS - Université Paris-Saclay  
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91406 Orsay Cedex - France  
Téléphone : +33 (0)1 69 07 46 00



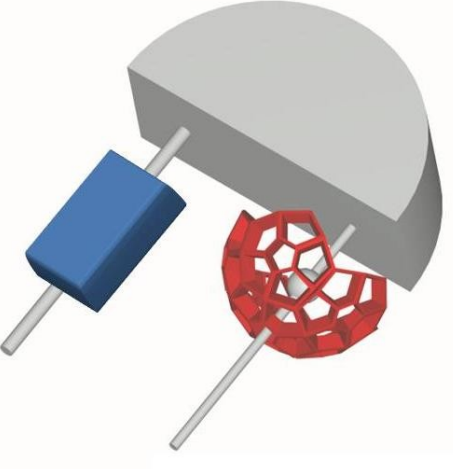
Increase to 24 Ge + AC



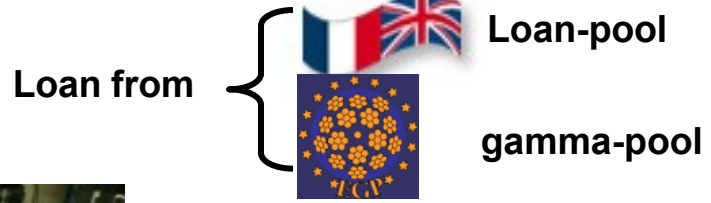
# ORGAM year 2010 : physics on line 320/Bacchus

➔ 36 Compton suppressed Ge detectors (meaning more or less: as much as possible of the EUROGAM resources)

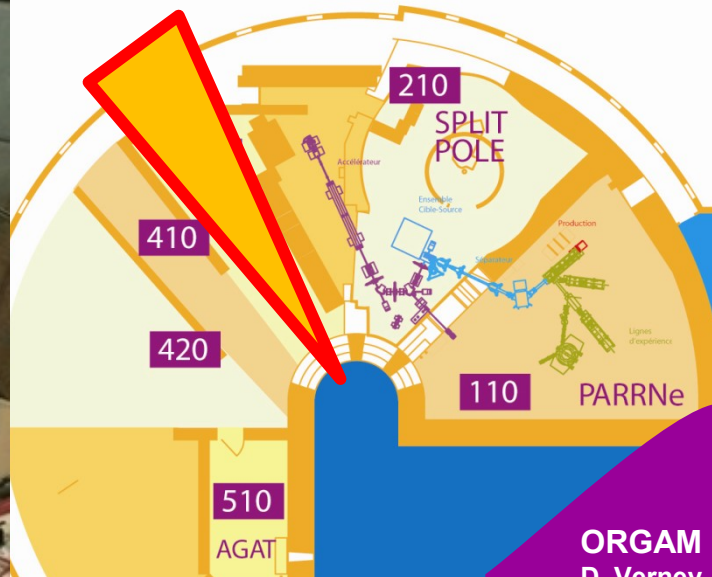
on line with the 0 degree spectrometer BACCHUS



Credits F Ibrahim



**Keyword is : 0 degree**



# Few words on BACCHUS and physics at forward angles

## Physics in the vertical ridge

### Quasi-fission mechanism (back home)

Nota : historically quasi-fission was discovered simultaneously at Orsay (Lefort) and Dubna (Volkov)

Volume 113B, number 4 PHYSICS LETTERS 24 June 1982

### MAGIC FEATURES OF $^{68}\text{Ni}$

M. BERNAS, Ph. DESSAGNE, M. LANGEVIN, J. PAYET, F. POUGHEON and P. ROUSSEL  
 Division de Recherche Expérimentale, IPN d'Orsay, BP no. 1, 91406 Orsay, France

Received 23 March 1982

From measurements of the angular distribution around  $0^\circ$  for the  $^{70}\text{Zn}(^{14}\text{C}, ^{16}\text{O})$  reaction, the first excited state of  $^{68}\text{Ni}$  observed at  $1.77 \pm 0.04$  MeV is shown to be  $0^+$ . This result establishes a new case of  $2_1^+$  and  $0_2^+$  inversion.

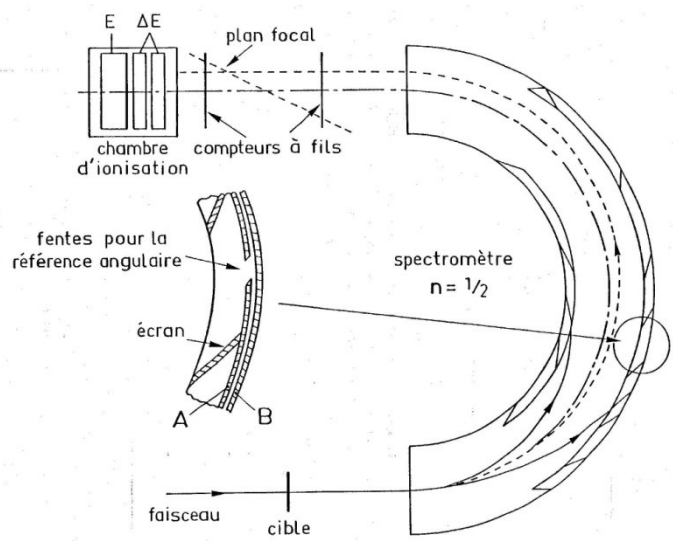


Fig.1: Système de détection.

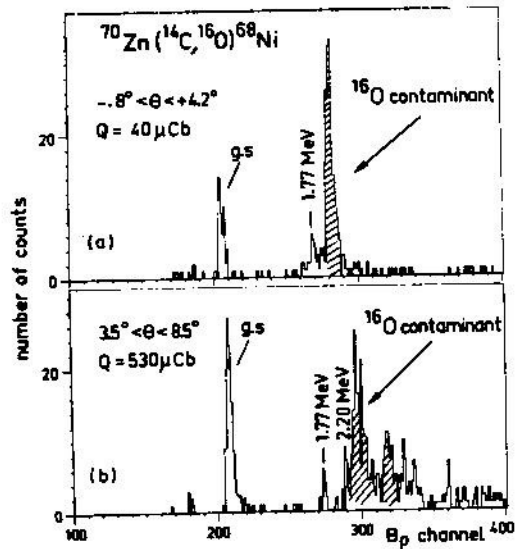
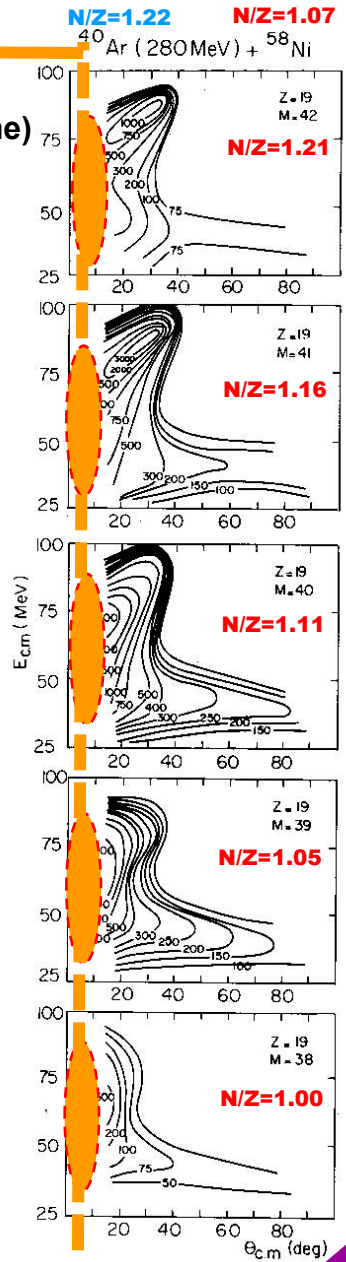


Fig. 2.  $^{68}\text{Ni}$  spectra integrated over  $5^\circ$  laboratory angle. Fig. 2b is the projection along the  $B\rho$  axis of the events shown in fig. 1.



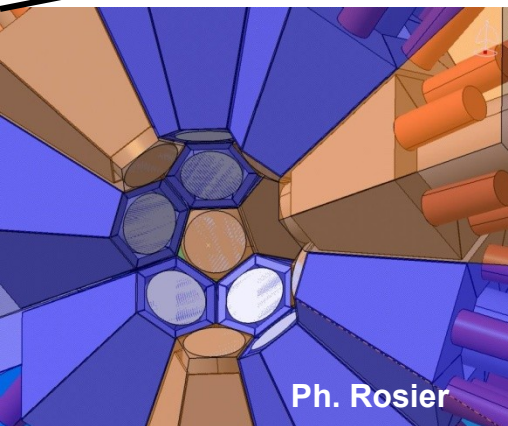
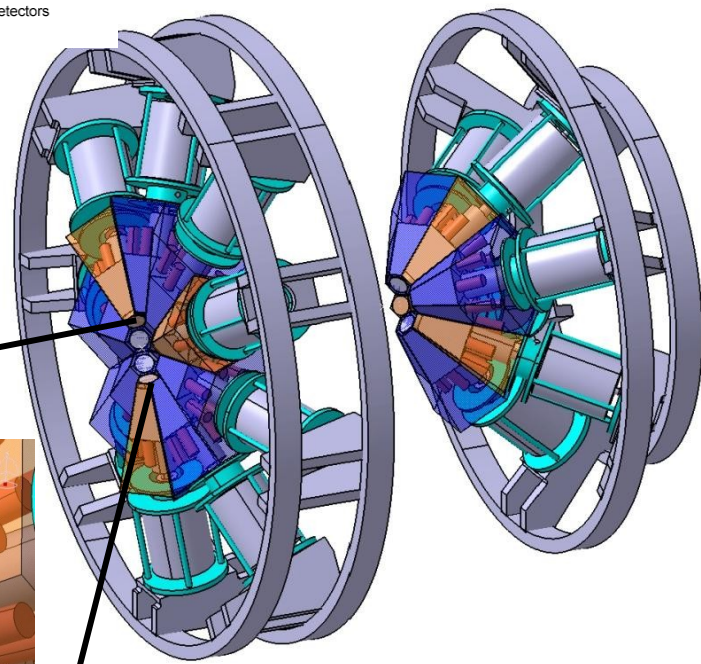
# Outlook : ORGAM close geometry

## R&D project, Division Instrumentation of the IPNO

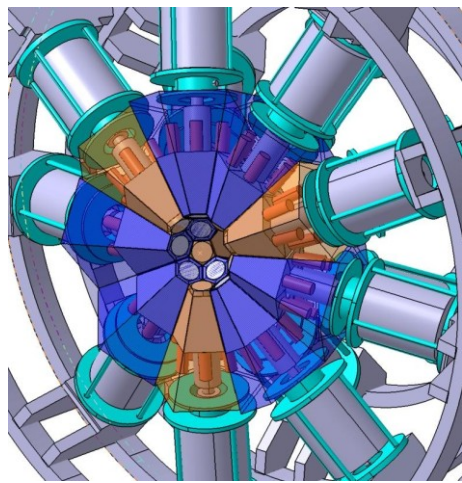


Research & Development Detection Department  
Design, construction and test of particle detectors

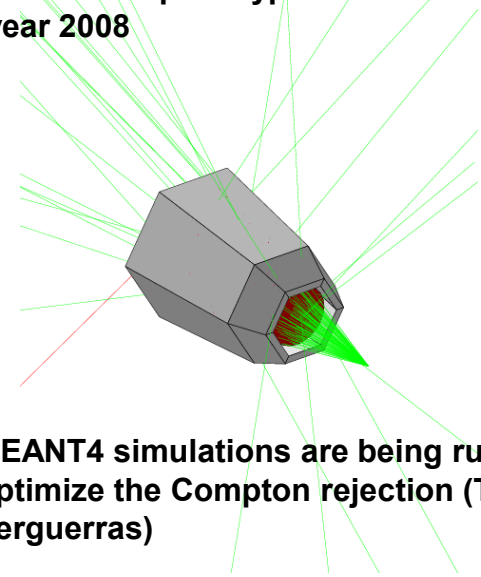
Only 15 Coaxial Detectors  
Isocahedron geometry  
(football ball:  
pentagons+hexagons)



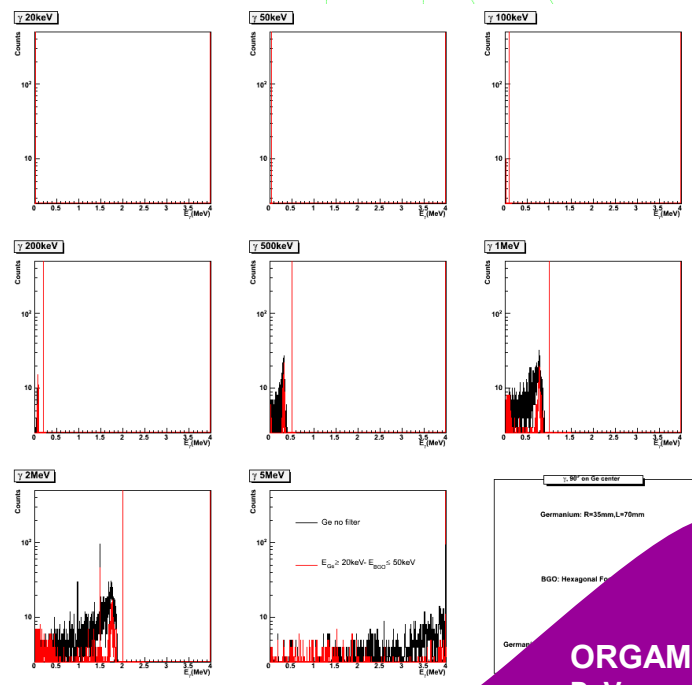
Ph. Rosier



Funding (local) has been obtained to realize one prototype of BGO shield in year 2008



GEANT4 simulations are being run to optimize the Compton rejection (Th. Zerguerras)



IN 2 P 3



Thank you !

