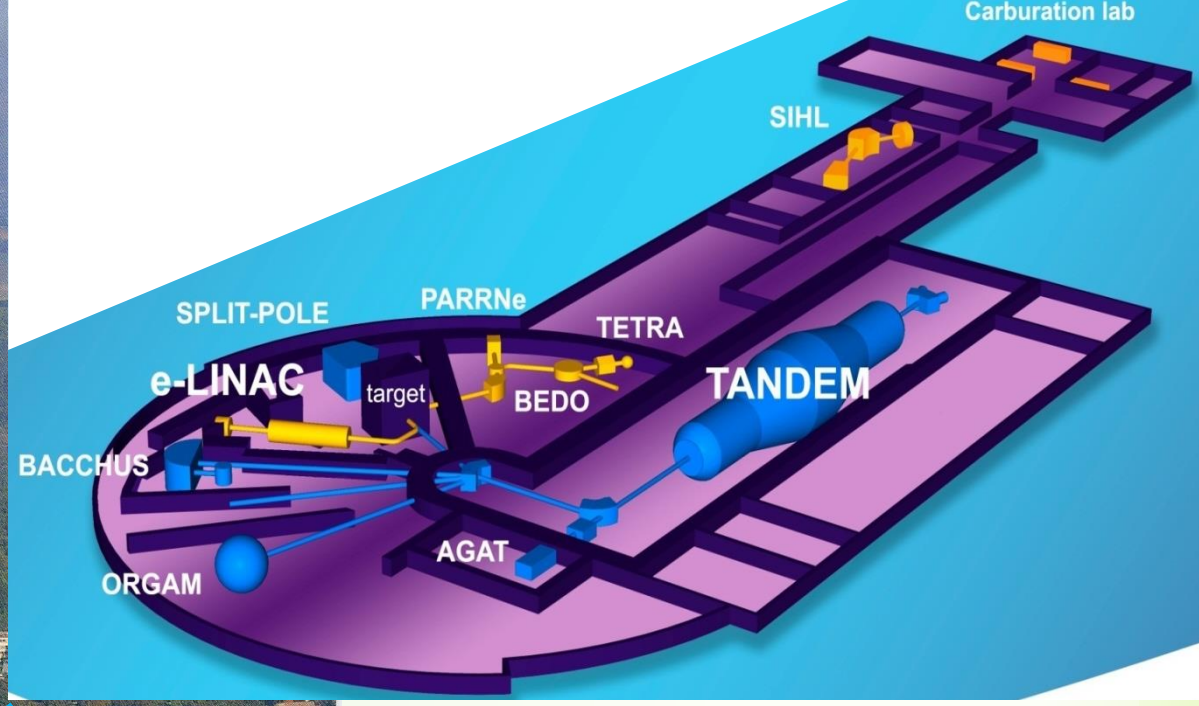
MINORCA campaign – present status

*G. Georgiev for the **MINORCA collaboration***

- What was the idea in the beginning - bringing the Miniball array to Orsay?
- What has been done up to now
  - Transport of material
  - Installation and getting the things working
  - Commissioning
  - First experiments in June 2014
- Planning for the coming months
  - Before the end of 2014 – mainly plunger experiments
  - Beginning of 2015 – Coulex measurements; LICONRE campaign

IPN INSTITUT DE PHYSIQUE NUCLÉAIRE ORSAY

CSNSM CENTRE DE SCIENCES NUCLÉAIRES ET DE SCIENCES DE LA MATIÈRE



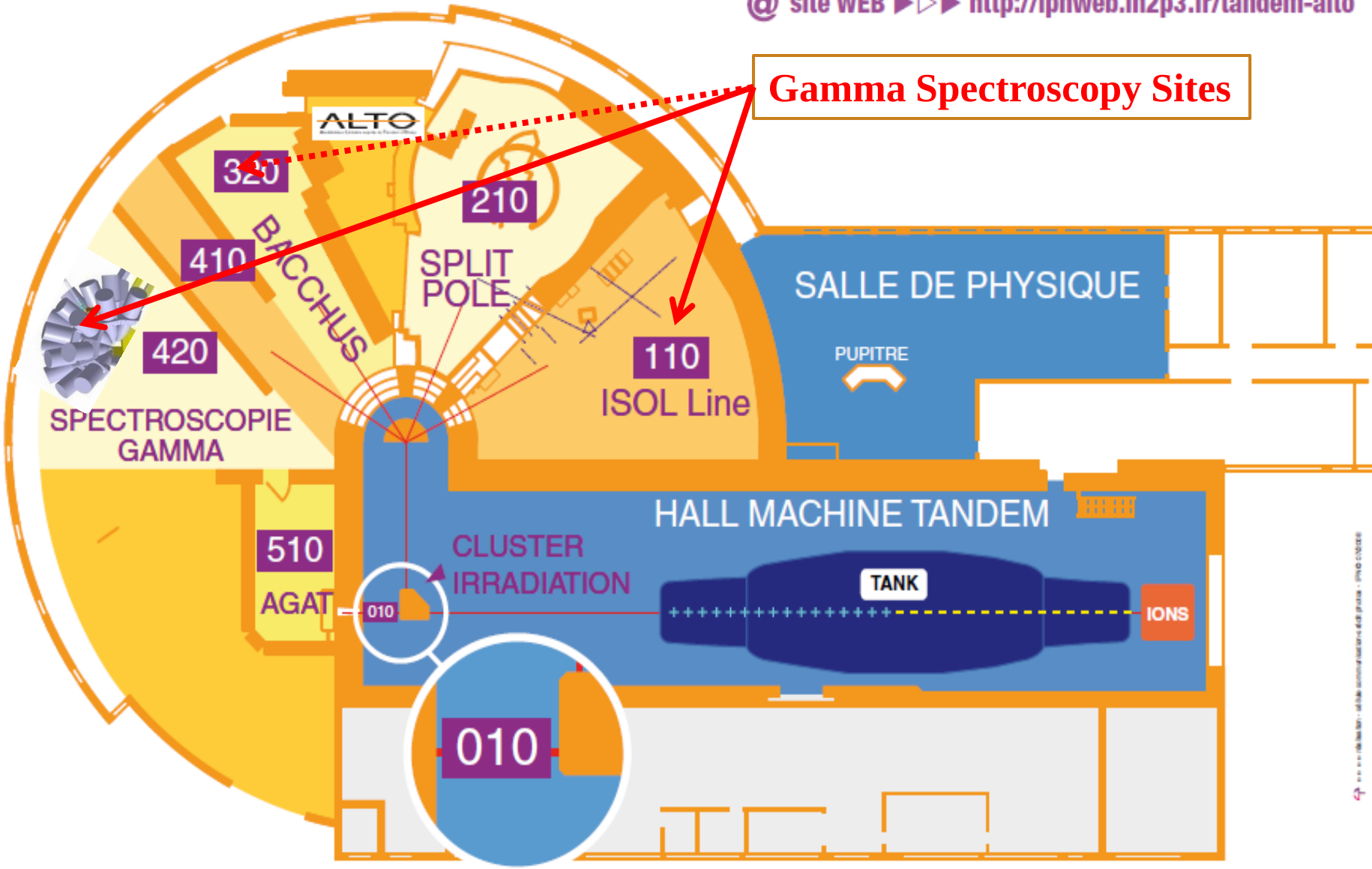
Tandem building
Institut de Physique Nucléaire
Campus of the Paris Sud University
Orsay (France)

ALTO: TNA within ENSAR

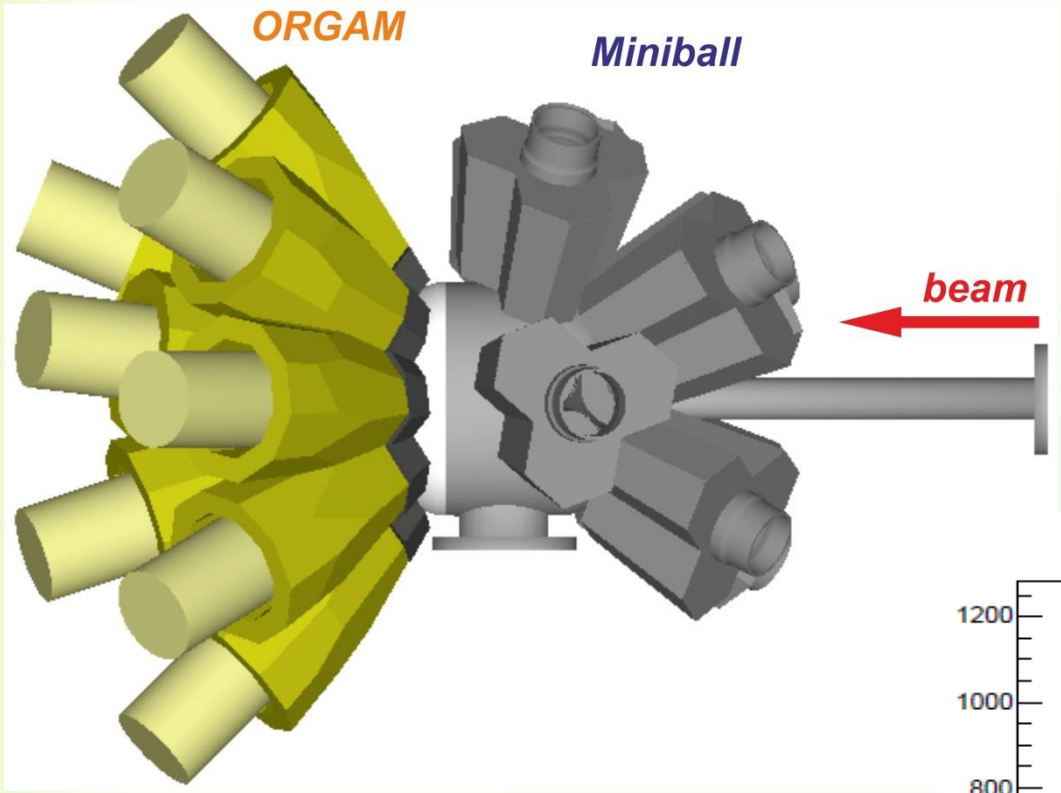
SEVENTH FRAMEWORK PROGRAMME

ENSAR

@ site WEB ▶▷▶ http://ipnweb.in2p3.fr/tandem-alto

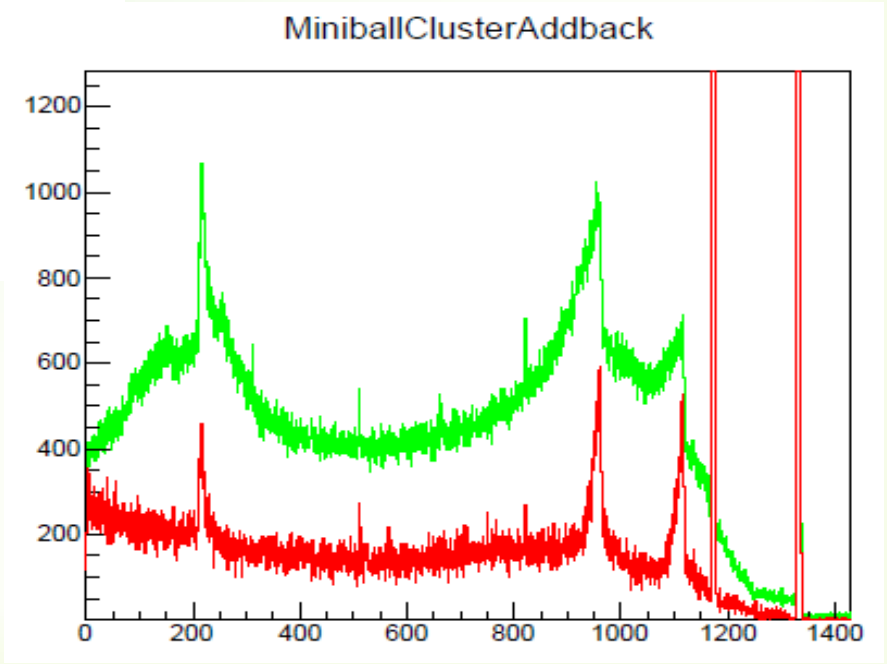


MINORCA – Miniball aNd ORgam CAmpaign



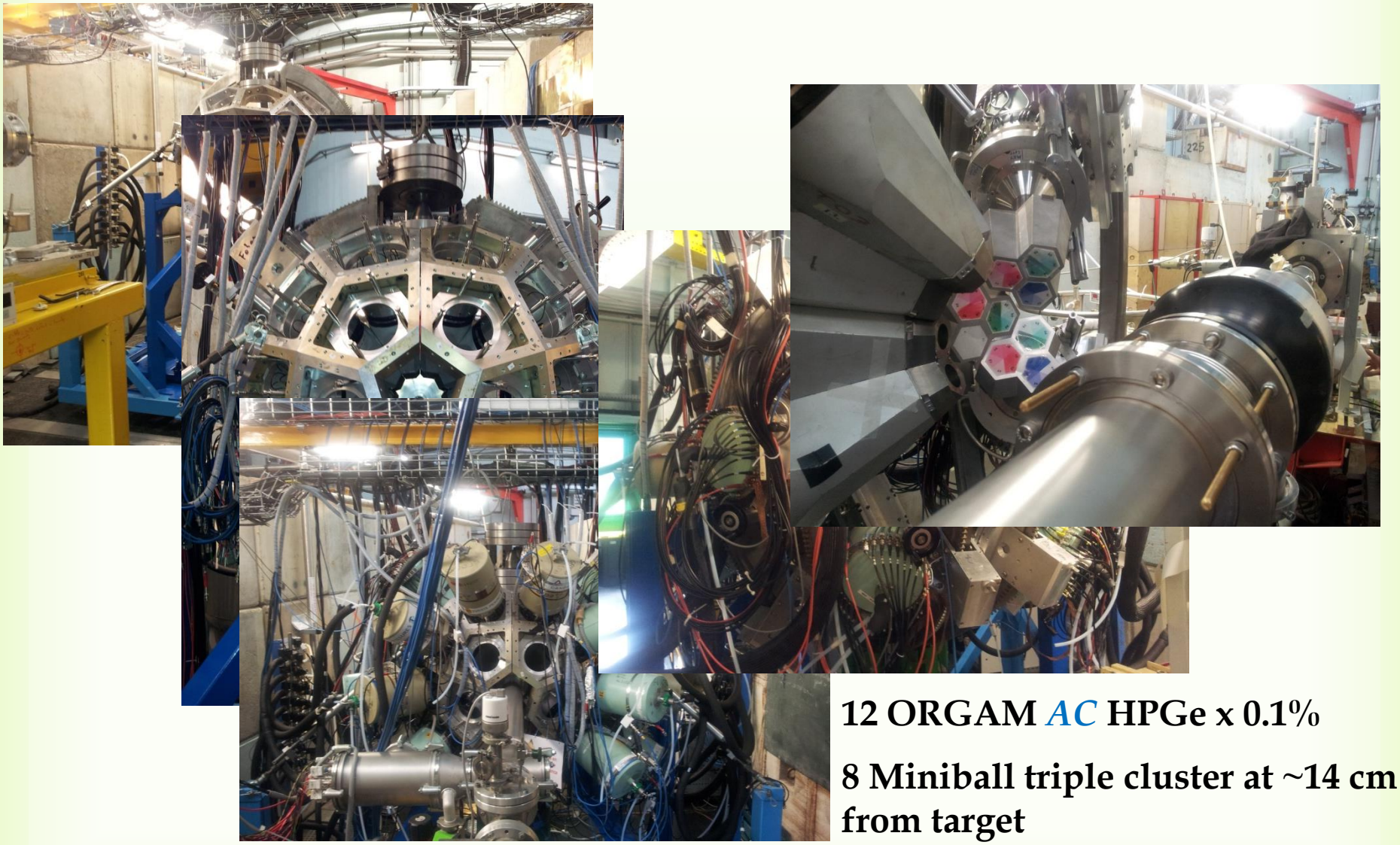
15 ORGAM *anti-Compton shielded* Ge detectors x 0.1%

8 Miniball triple cluster detectors at @ 14 cm from target *with addback*



Efficiency at 1332 keV:
6.3% - Miniball
1.8% - 15 ORGAM Ge's
TOTAL → 8.1%

MINORCA



12 ORGAM *AC* HPGe x 0.1%

8 Miniball triple cluster at ~14 cm from target
7.3% efficiency @ 1.33 MeV

MINORCA Accepted Proposals – January 2014

requested UTs: **232** (about 80 days)

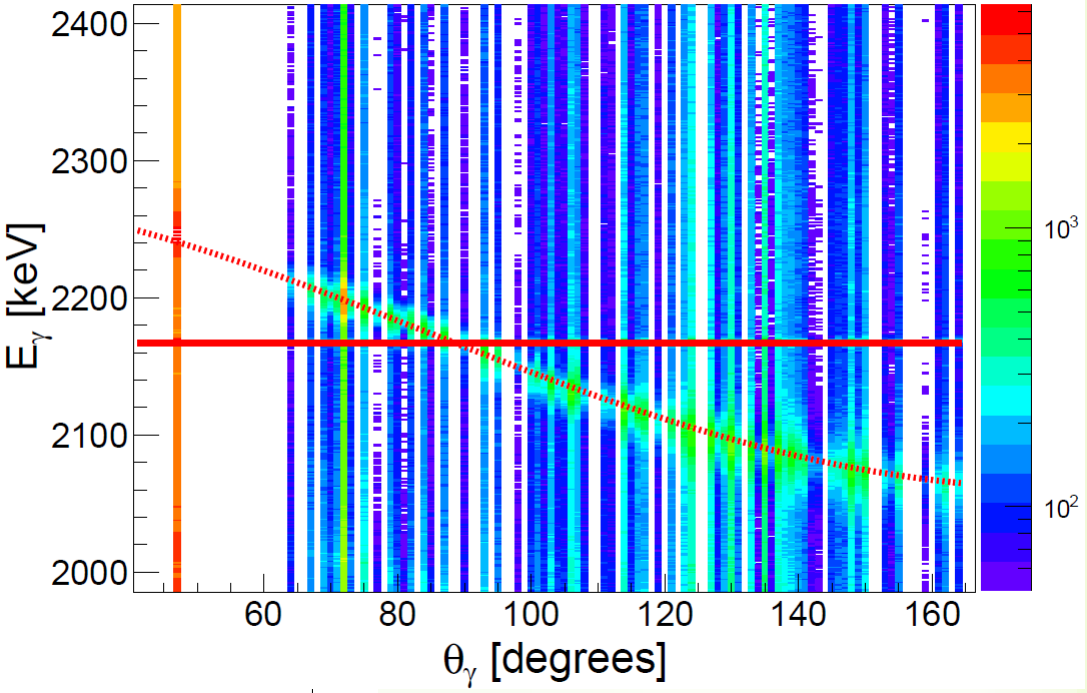
1. **N-SI-48b:** g factor measurements of short-lived states in the Mg isotopes towards the Island of Inversion: ^{26}Mg and ^{28}Mg (G. Georgiev, A. Stuchbery, A. Kusoglu) → **18 UTs**
2. **N-SI-66:** Single-particle structure in the second minimum. Search for high-K bands above fission isomers. (G. Georgiev, D. Balabanski, G. De France) → **45 UTs**
3. **N-SI-68:** Shape coexistence in ^{74}Se studied through complete low-spin spectroscopy after Coulomb excitation (M. ZIELINSKA, K. Wrzosek-Lipska) → **21 UTs**
4. **N-SI-69:** Measurement of octupole collectivity in Nd, Sm and Gd nuclei using Coulomb excitation (P.A. Butler, M. Zielińska) → **21 UTs**
5. **N-SI-70:** Spectroscopy of the neutron-rich fission fragments produced in the ^{238}U(n,f) reaction (J. Wilson, M. Lebois) → **45 UTs**
6. **N-SI-72:** Evaluation of the Angular Momentum Dependence of the ^{96}Mo γ Strength Function (B. Goldblum) → **22 UTs**
7. **N-SI-74:** Search for X(5) symmetry in ^{78}Sr nucleus (K. Gladnishki) – **21 UTs**
8. **N-SI-77:** Lifetime Measurement of ^{100}Ru: A possible candidate for the E(5) critical point symmetry (Th. Konstantinopoulos) – **18 UTs**
9. **N-SI-79:** Lifetime measurements in ^{113}Te: Determining Optimal effective charges approaching the N=Z=50 doubly-magic shell closure. (D.M. Cullen) – **21 Uts**

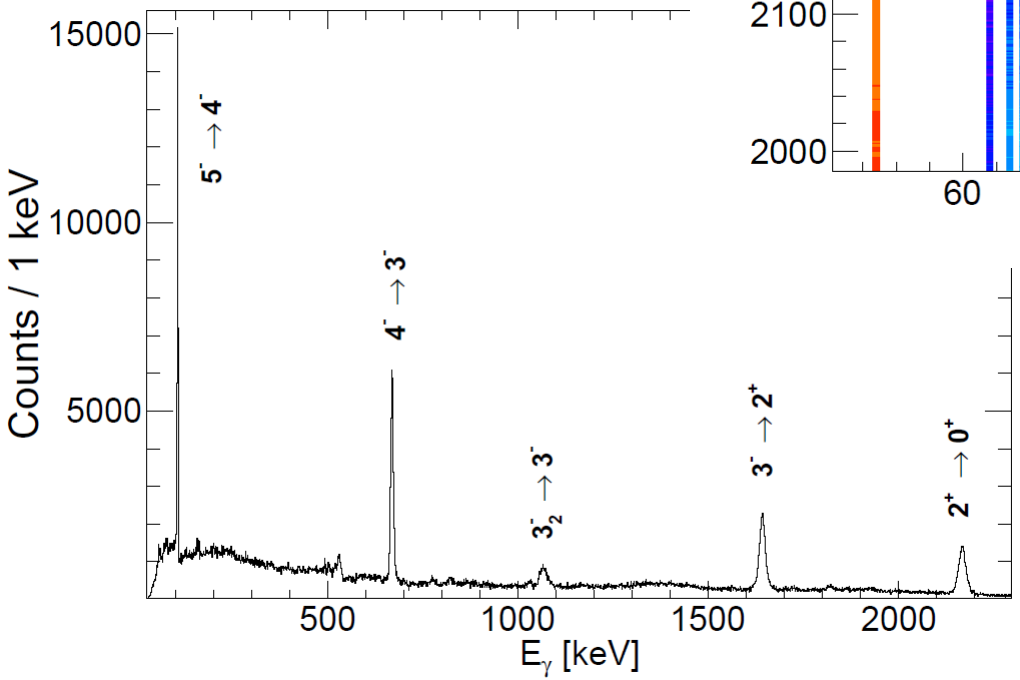
Backlog from 2013:

1. **N-SI-63:** Time dependent recoil in vacuum for Na-like ^{56}Fe ions (A. Stuchbery, D. Balabanski) - **17 UTs**

MINORCA commissioning: May 2014

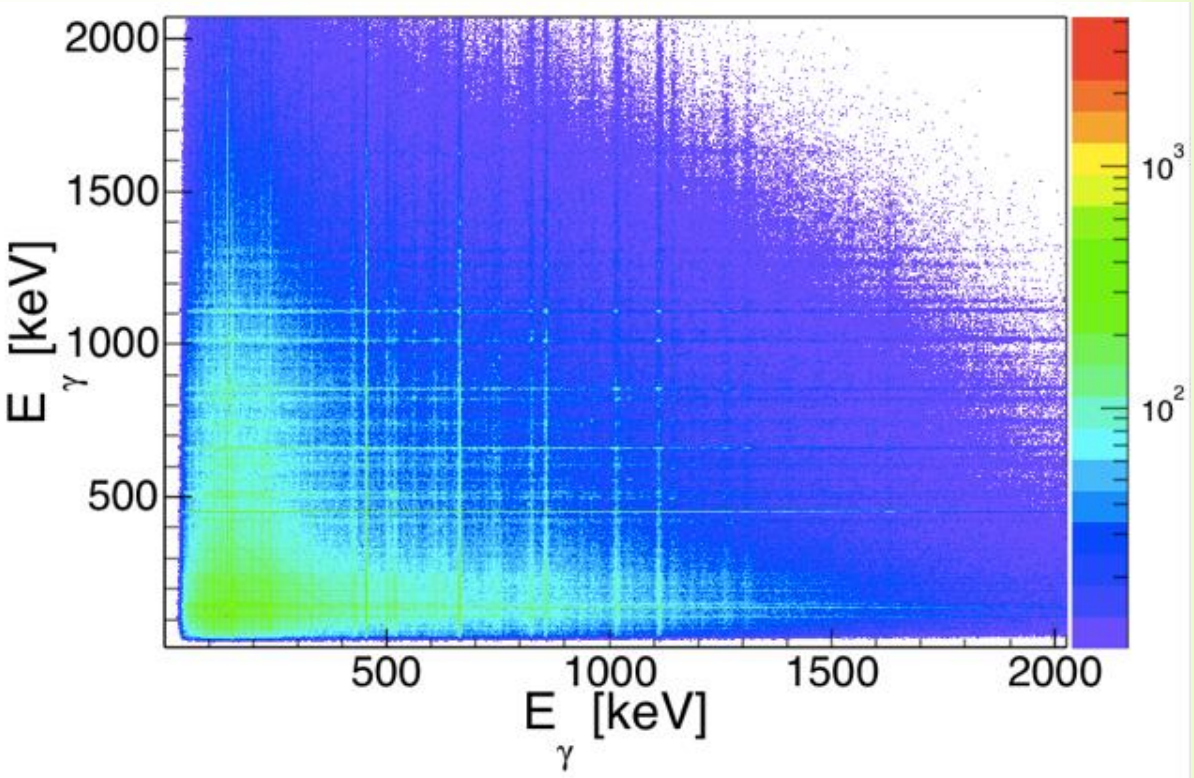
^{37}Cl @ 120 MeV
Target: 1.9 mg/cm2 CD2
Reaction: d(^{37}Cl,n)^{38}Ar
v/c ~ 5%
Energy lost in target: ~40 MeV

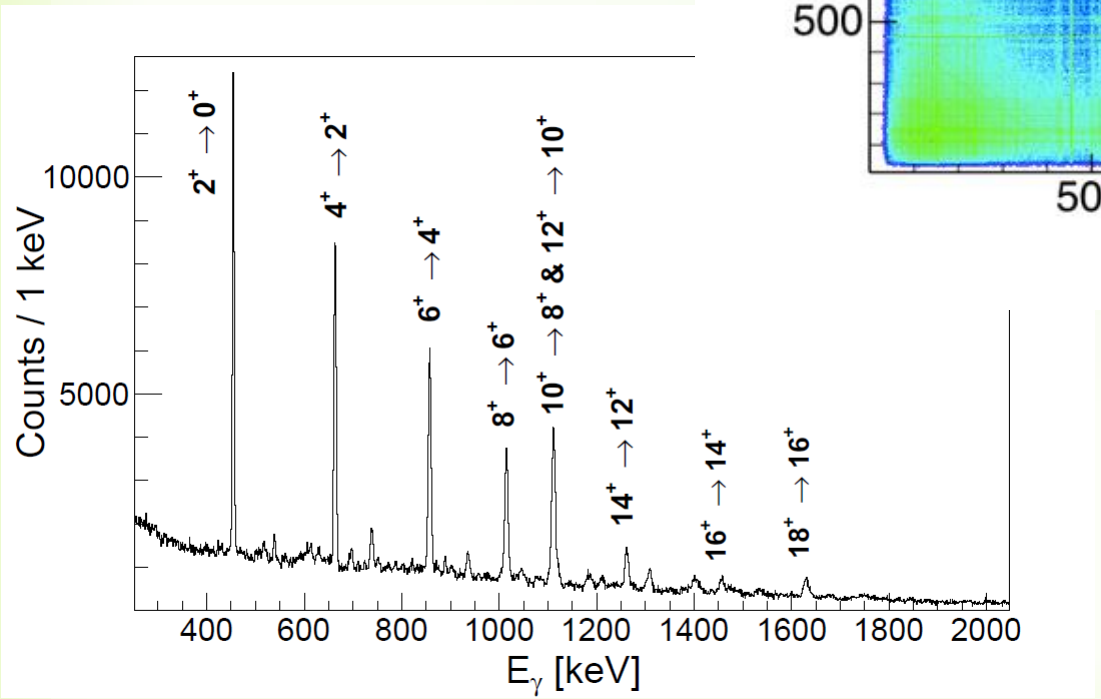




MINORCA commissioning: May 2014

^{37}Cl @ 120 MeV
Target: 1.1mg/cm^2 ^{45}Sc
Reaction: ^{45}Sc(^{37}Cl,α2n)^{78}Kr
v/c ~ 2.1 %





Experiments up to now

- 23 – 29 June:
  N-SI-63: Time dependent recoil in vacuum for Na-like ^{56}Fe ions (A. Stuchbery, D. Balabanski) – *see the talk of A. Goasduff*

- 30 June – 6 July:
  N-SI-77: Lifetime Measurement of ^{100}Ru: A possible candidate for the E(5) critical point symmetry (Th. Konstantinopoulos) – *see the talk of Th. Konstantinopoulos*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
May	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
June	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	
July	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th

Comm.

N-SI-63

N-SI-77

To follow: before the end of 2014

- 13 – 18 October:
  N-SI-79: Lifetime measurements in ^{113}Te: Determining Optimal effective charges approaching the N=Z=50 doubly-magic shell closure. (D.M. Cullen)
- 27 October – 1 November:
  N-SI-74: Search for X(5) symmetry in ^{78}Sr nucleus (K. Gladnishki)
- 3 – 9 November:
  N-SI-48b: g factor measurements of short-lived states in the Mg isotopes towards the Island of Inversion: ^{26}Mg and ^{28}Mg (G. Georgiev, A. Stuchbery, A. Kusoglu)
- 1- 21 December:
  N-SI-66: Single-particle structure in the second minimum. Search for high-K bands above fission isomers. (G. Georgiev, D. Balabanski, G. De France)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
October	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr
November	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	
December	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We

N-SI-79

N-SI-74

N-SI-48b

N-SI-66

Experiments to be scheduled in 2015

1. **19 – 25 January:**
   N-SI-68: Shape coexistence in ^{74}Se studied through complete low-spin spectroscopy after Coulomb excitation (M. ZIELINSKA, K. Wrzosek-Lipska)

2. **26 January – 1 February:**
   N-SI-69: Measurement of octupole collectivity in Nd, Sm and Gd nuclei using Coulomb excitation (P.A. Butler, M. Zielińska)

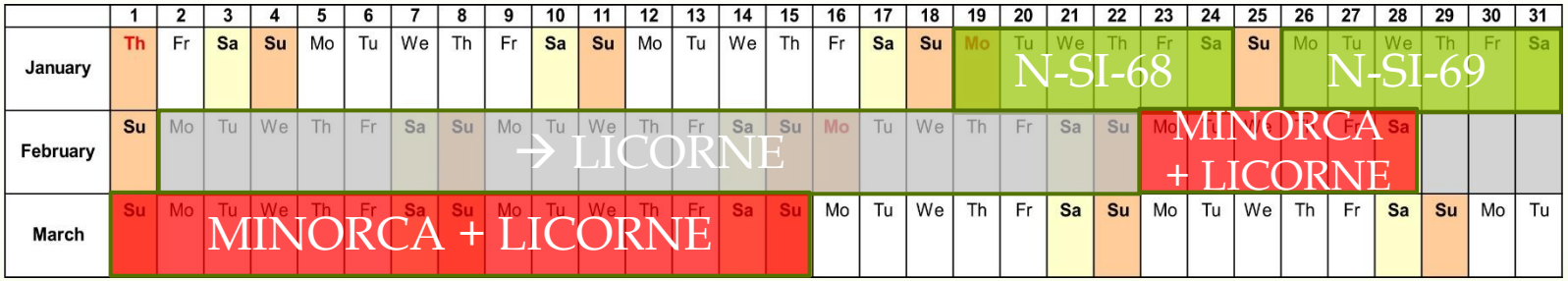
- 3 weeks needed for the modification of the MINORCA configuration in order to install the LICORNE target and setup

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
																			N-SI-68							N-SI-69					
February	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa			
									→ LICORNE																						
March	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu

Experiments to be scheduled in 2015 (cont.)

1. **23 February – 22 March:**
   N-SI-70: Spectroscopy of the neutron-rich fission fragments produced in the ^{238}U(n,f) reaction (J. Wilson, M. Lebois)
   N-SI-72: Evaluation of the Angular Momentum Dependence of the ^{96}Mo γ Strength Function (B. Goldblum)

- With the experiments accepted by the previous ALTO PAC the MINORCA campaign should be done by end of March 2014



MANY Thanks to:

- IPN, Orsay: I. Matea, G. Mavilla, P. Rosier, A. Gottardo, M. Josselin, Th. Zerguerras, N. Hammoudi, D. Verney
- CSNSM, Orsay : S. Cabaret , J. Ljungval, A. Goasduff, Th. Konstantinopoulos
- IKP, Cologne: N. Warr, H. Hess, B. Siebeck …
- LMU, Munich: R. Lutter