

AGATA-PRESPEC

In-beam perspectives and requirements

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AGATA Week
LNL Legnaro

From RISING to HISPEC/DESPEC

RISING stopped in September 2009

HISPEC/DESPEC starts after 2016

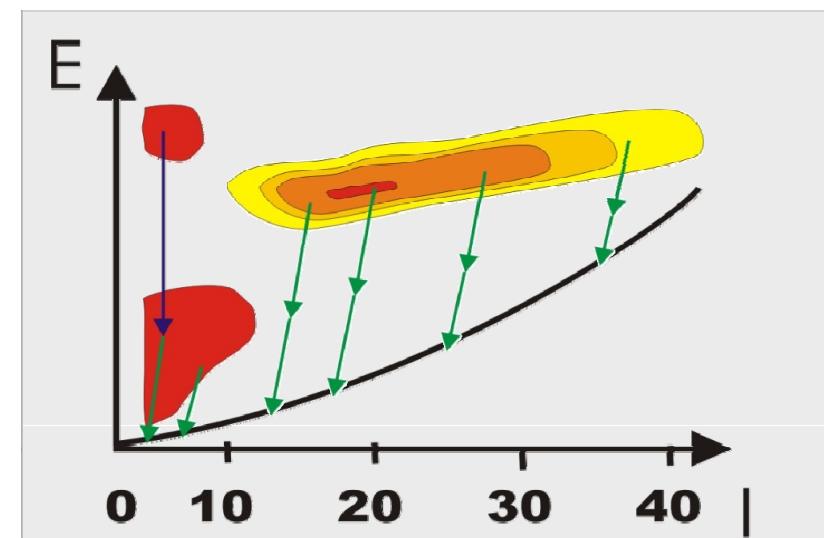
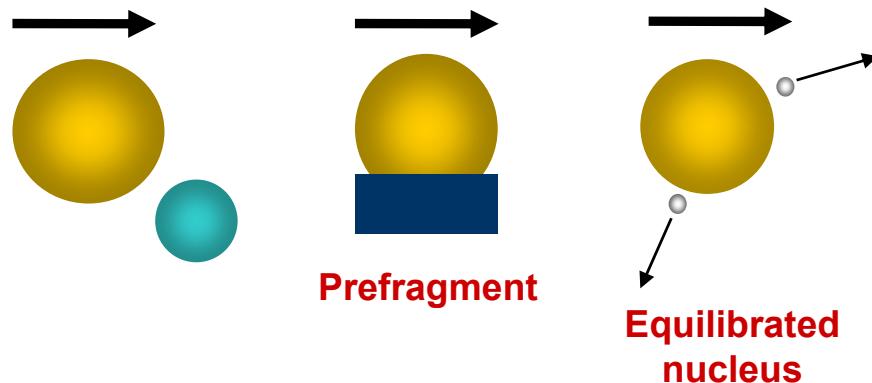
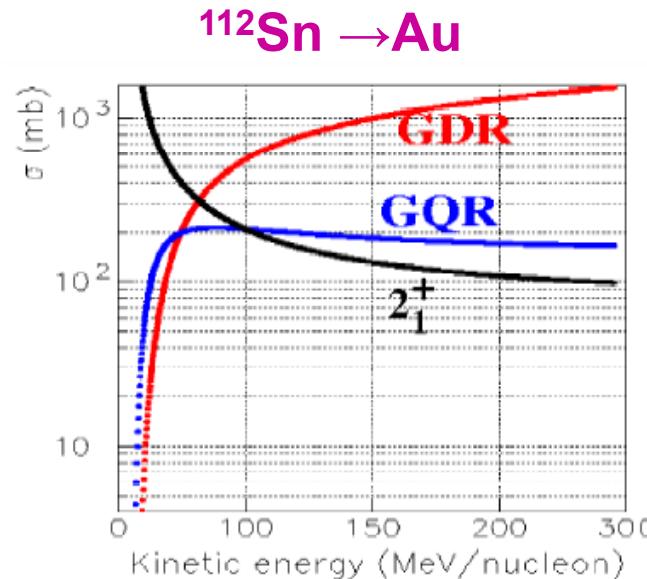
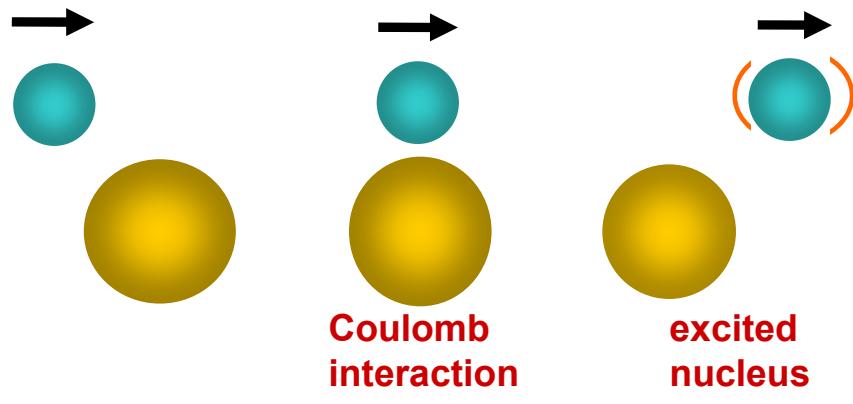
Want to continue successful spectroscopy programme

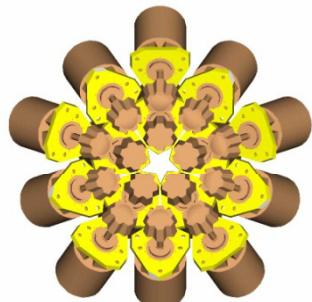
Need to commission and implement new instrumentation



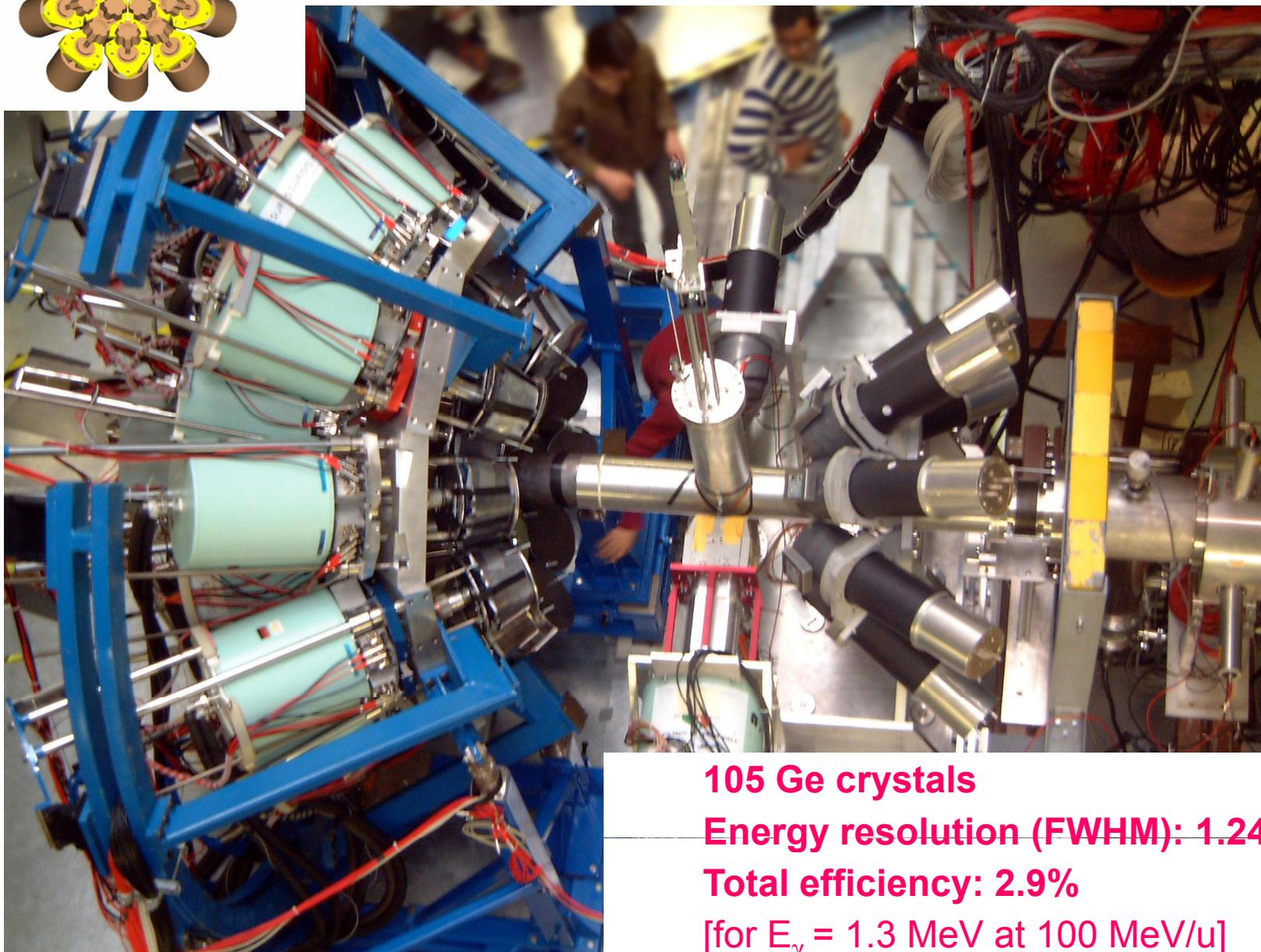
Decay and **In-beam spectroscopy** programme at the FRS until HISPEC/DESPEC starts
Employing new instrumentation as it becomes available
Platform for coordinated test and commissioning of HISPEC/DESPEC components
Organisational framework of the spectroscopy community at GSI/FAIR

Relativistic Coulomb excitation / fragmentation





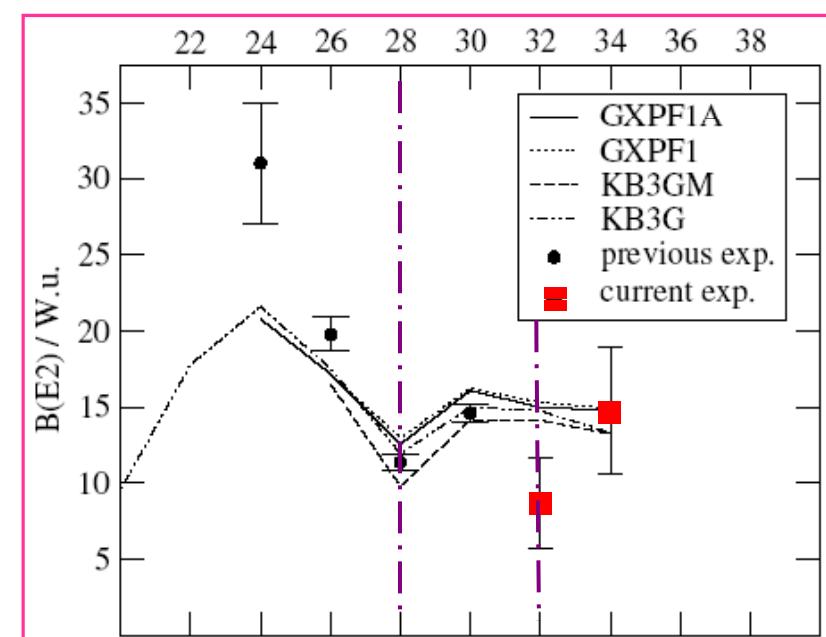
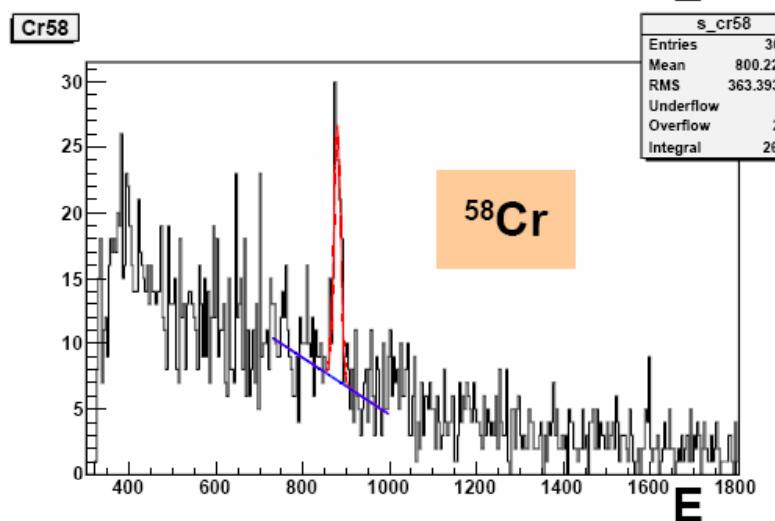
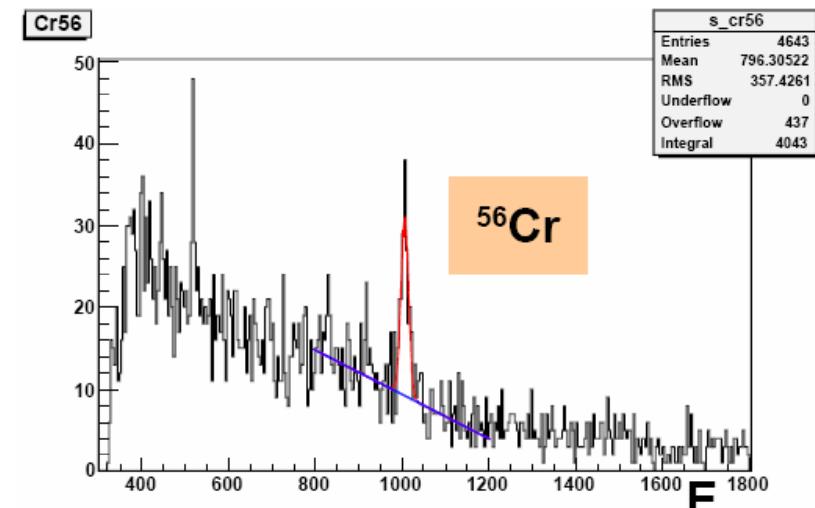
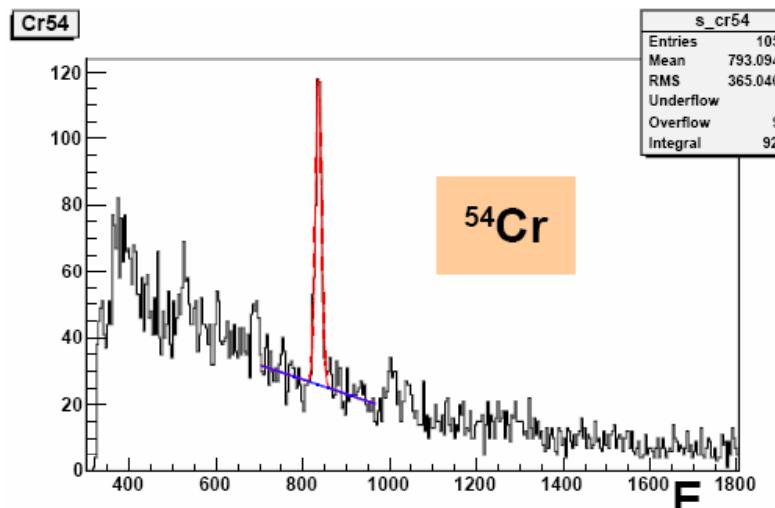
RISING In-flight set-up



105 Ge crystals
Energy resolution (FWHM): 1.24%
Total efficiency: 2.9%
[for $E_\gamma = 1.3$ MeV at 100 MeV/u]

Coulomb Excitation of n-rich Cr Isotopes

A new sub-shell closure exists at N=32

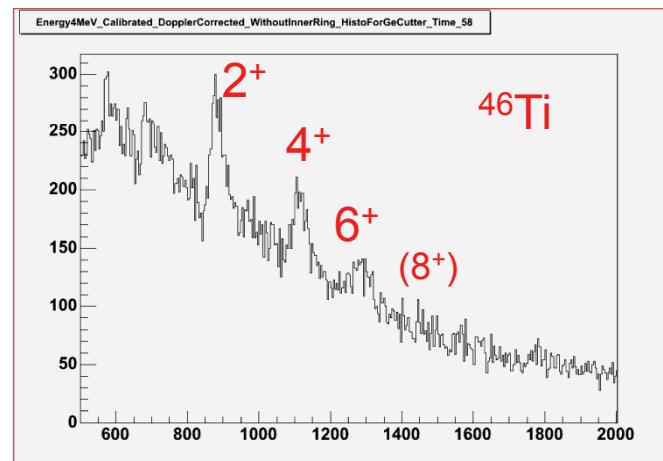
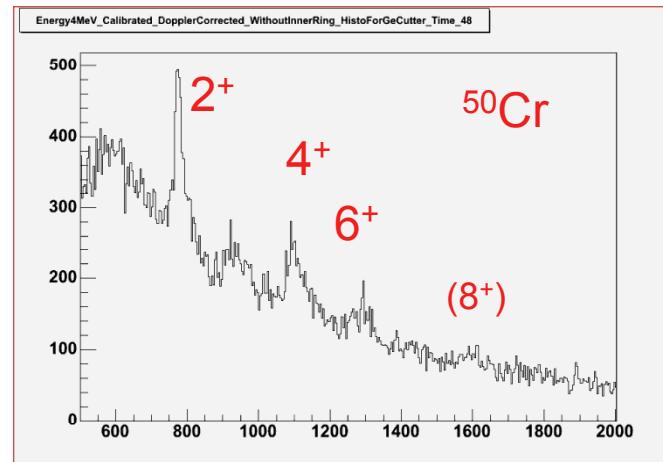
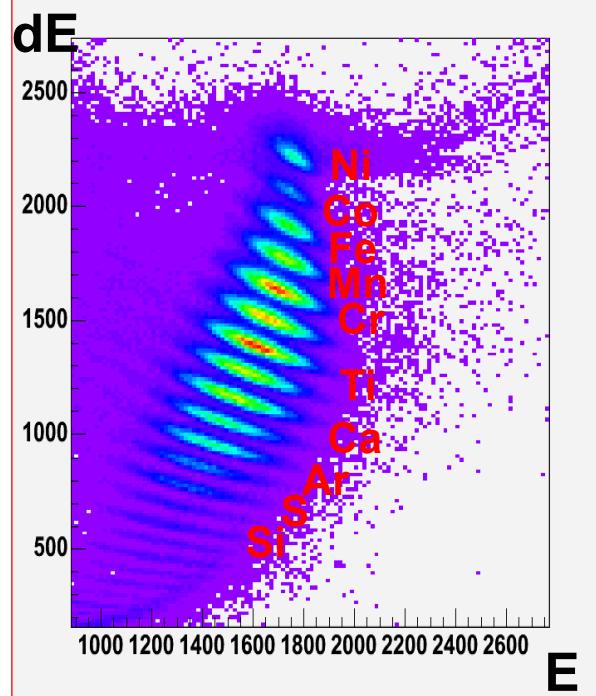


Evidence for reduced $B(E2)$ value at N=32

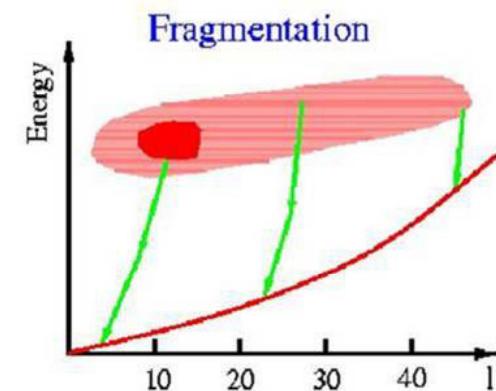
Secondary fragmentation of ^{55}Ni on ^9Be at 140 MeV/u

Mirror symmetry
at $N \approx Z$

Mike Bentley et al.

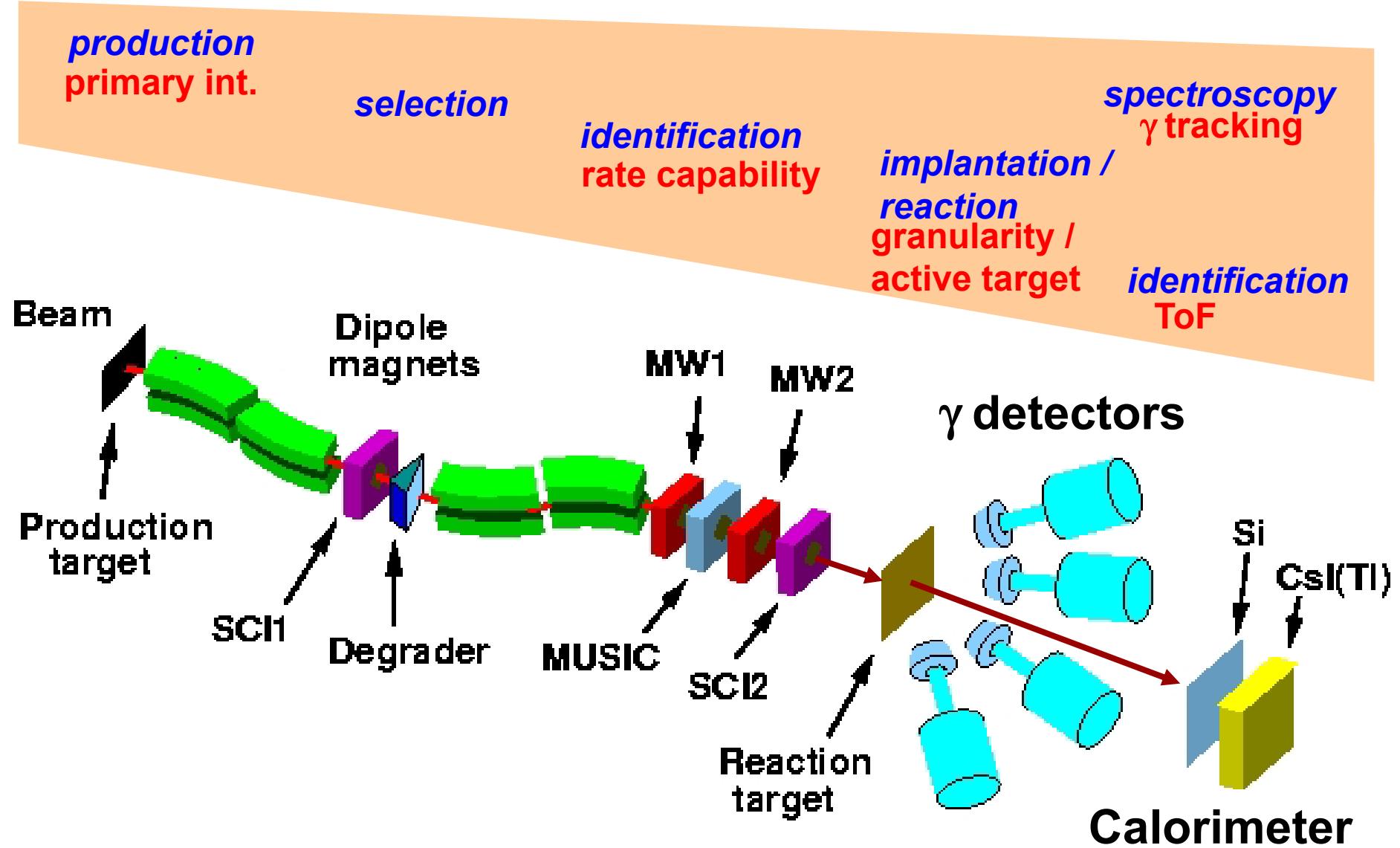


extract
lifetimes
from
lineshapes



First observation of higher spin states at relativistic energies

Planned Improvements



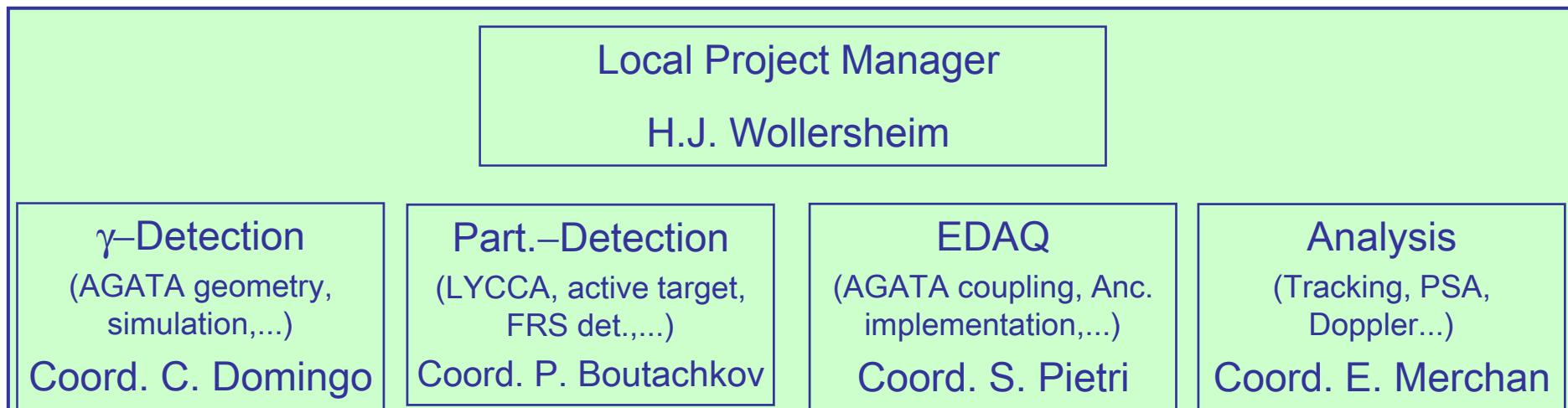
Steps towards AGATA at GSI

History:

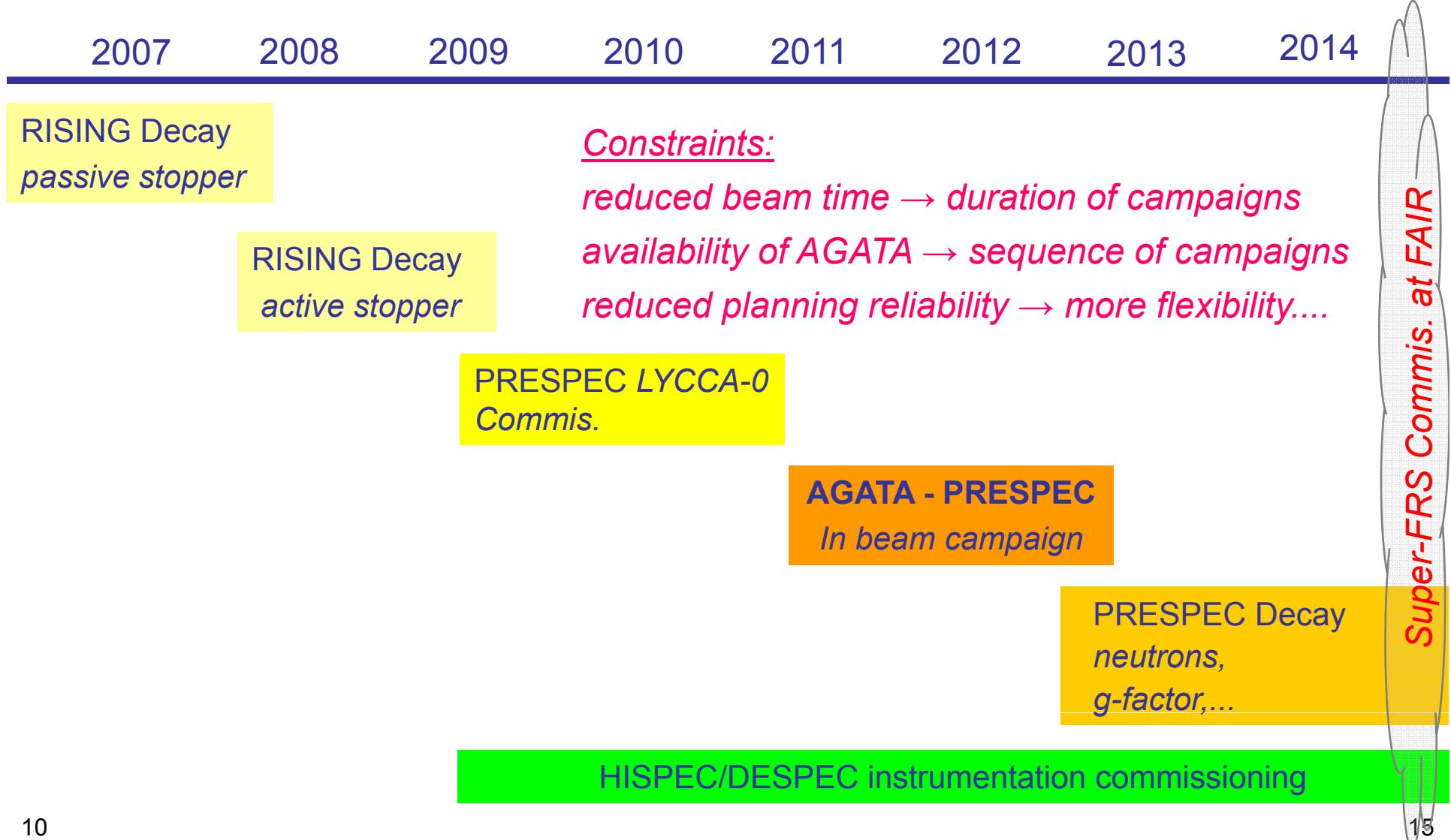
how to complicate things....

- 1.2009: GANIL not available for AGATA in 2011/12
- 2.2009: Development of set-up starts
(≈10x sensitivity, EDAQ scenarios; 2 y for dev., constr. and install.)
- 3.2009: GSI management provisionally agrees to host AGATA in 2011/12
(resources and beam time planning starts)
- 5.2009: GSI accepts AGATA support and beam time requirements
(under the condition of a general 5 year NUSTAR beam time plan)
- 6.2009: PRESPEC workshop to agree on up-front experiments
- 7.2009: NUSTAR, AGATA and GSI to agree on 5 year beam time plan
- 7.2009: Mini Workshop on AGATA Detector set-up
- 9.2009: Official start of PRESPEC
- 10.2009: Start of working groups
- 10.2009: G-PAC on PRESPEC up-front experiments
- 12.2009: Local Project Manager approved
- 1.2010: Local organization defined

AGATA-PRESPEC local organization



RISING to PRESPEC to HISPEC/DESPEC



Fast Beam Campaign

provisional time plan

	2010				2011				2012				2013			
	Q1	Q2	Q3	Q4												
Beamtime UNILAC																
Beamtime SIS																
Beamtime ESR																
Shut-Down UNILAC																
Shut-Down SIS																
PRESPEC Commissioning																
2 weeks PRESPEC front-up																
12 weeks Fast-beam AGATA																

AGATA Fast Beam Campaign

how to dissolve complexity....

Time plan:

- 1.2010: Freeze Geometry and EDAQ concept
- 5.2010: AGATA physics workshop (Istanbul)
- 2010: Perform PRESPEC up-front experiments without AGATA
Proposal submission and G-PAC evaluation
- 7.2011: Installation of AGATA
- 10.2011: Operation of AGATA In-beam Campaign
- 4.2013: Dismounting of AGATA

Fast Beam Campaign

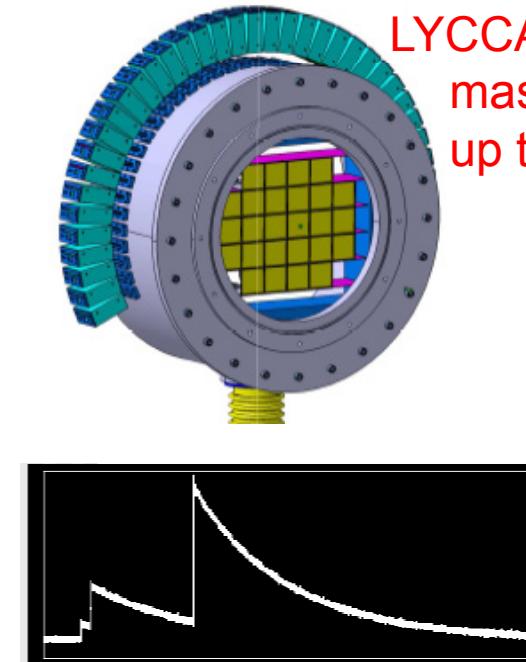
how to dissolve complexity....

Conclusions so far:

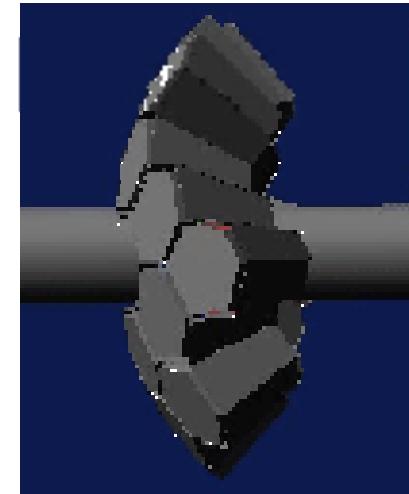
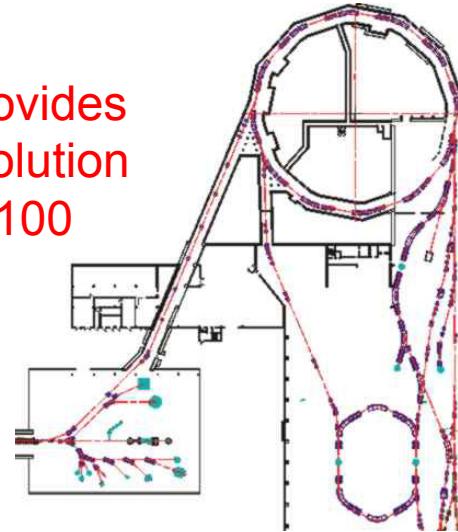
- LYCCA-0 commissioning and some up-front experiments needed before AGATA can be successfully implemented
- Call for additional proposals from the wider community is mandatory
- Concentration on outstanding and well focused physics themes is adequate
- Balancing the needs for beam time and resources within AGATA, PRESPEC, NUSTAR and all other GSI/FAIR communities on a mid-term basis is essential
- Flexibility is required to deal with time delays

Fast Beam Campaign

great perspectives....

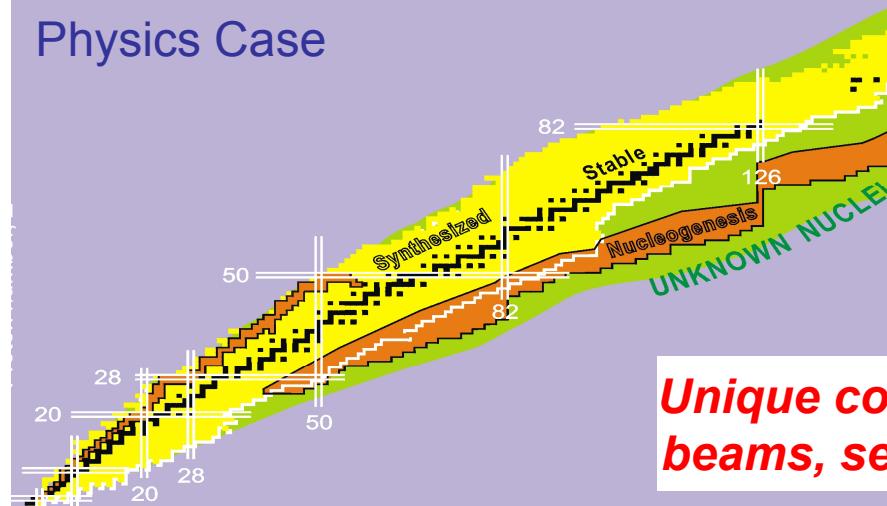


LYCCA-0 provides mass resolution up to $A \approx 100$



AGATA increases γ -sensitivity 10x ...100x

Tracking det. and EDAQ upgrade increase max. rate and throughput 10x



Very attractive and competitive spectroscopy themes

Unique combination of beams, set-up and people

AGATA Fast Beam Campaign

Urgent tasks:

- Define the optimal AGATA Detector geometry
 - Physics needs (*fast RIB experiments, UNILAC programme?*)
 - Detector qualities (*efficiency, position sensitivity, response, tracking*)
 - Additional gamma detectors (*EUROBALL Cluster, MINIBALL, HECTOR*)
 - Environmental constraints (*space, access, radiation, media*)
- Specify the EDAQ concept