

SUMMARY OF LOIS FOURTH AGATA PRE-PAC

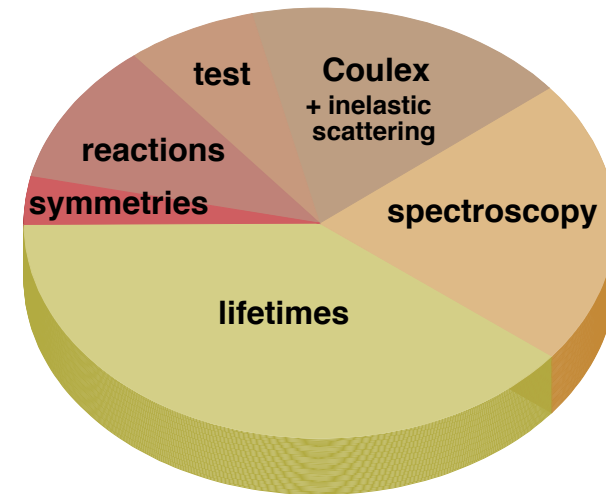
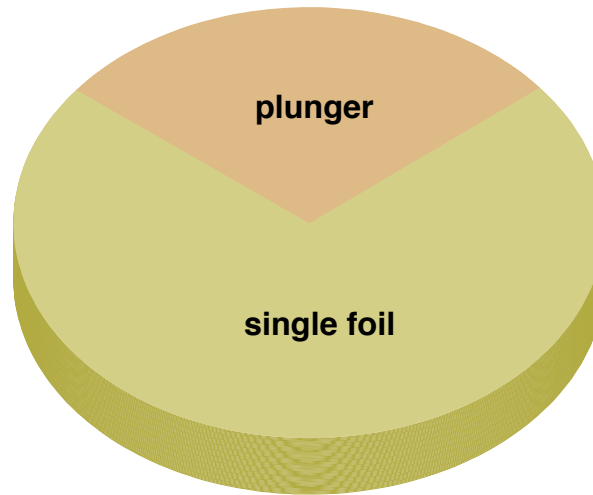
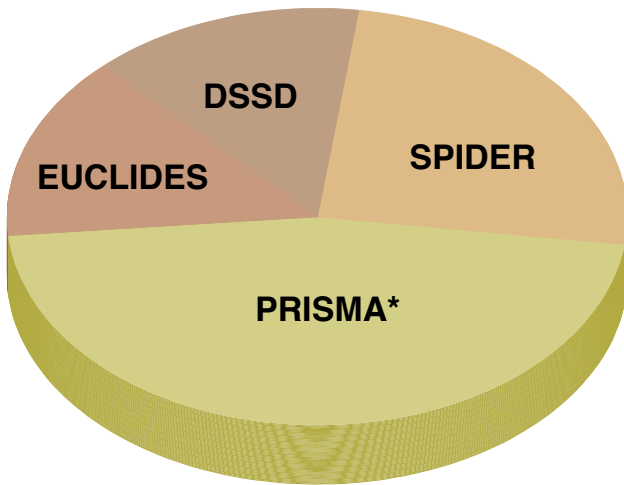
Magda Zielińska, CEA Saclay

4th AGATA Pre-PAC meeting, Legnaro, October 2-3, 2023

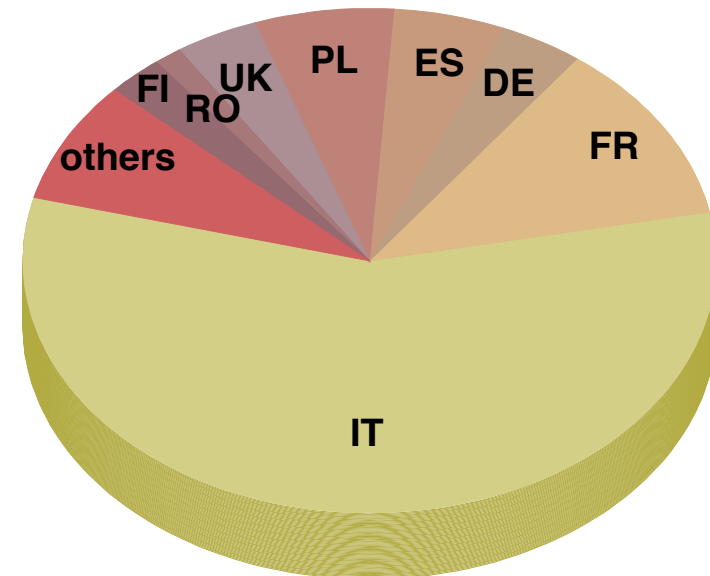
- stable beams from the Tandem-ALPI-PIAVE complex
- complementary detectors compatible with PRISMA
- experiments ready to run before summer 2024

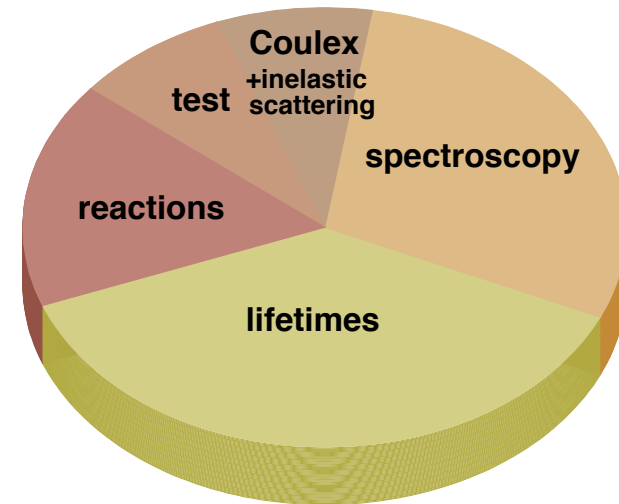
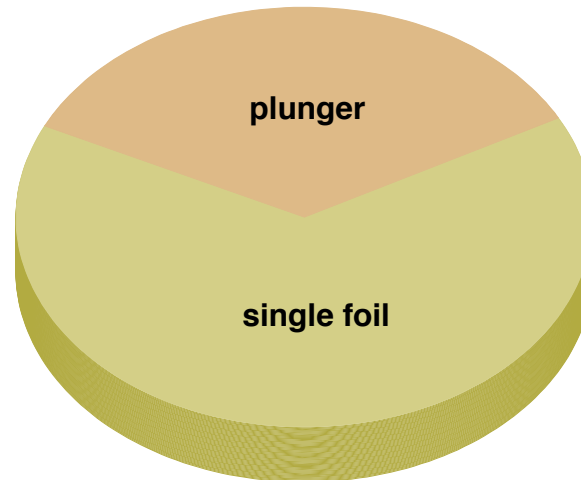
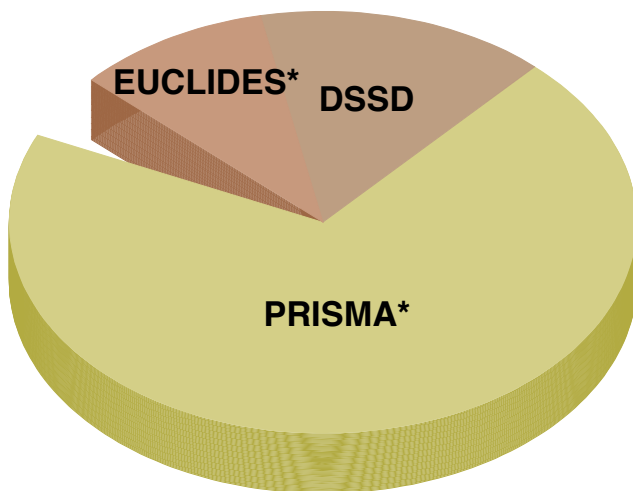
- second Pre-PAC (and first for the TAP complex) where only new projects need to be presented; there may be projects that will be proposed to the PAC following their discussion at earlier Pre-PAC meetings

- current Pre-PAC: 13 new projects + 3 building on earlier measurements with AGATA@LNL + 4 resubmitted ones, for a total of 144 days (+ one project that did not provide a beamtime estimate 😞)
- for comparison: previous Pre-PAC for the TAP complex: 28 projects, but only 9 new ones

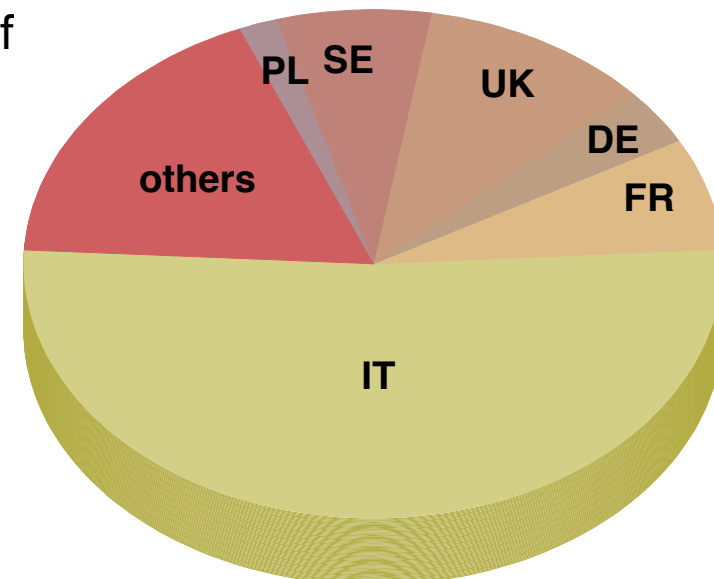


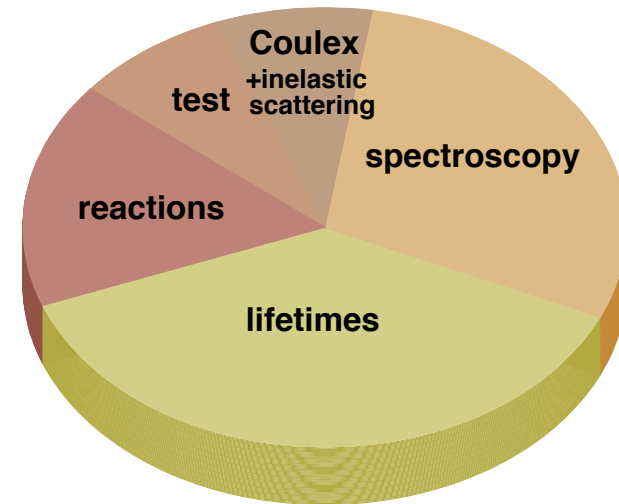
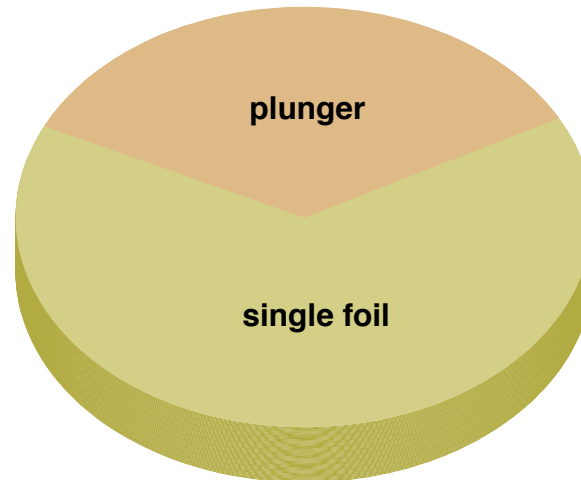
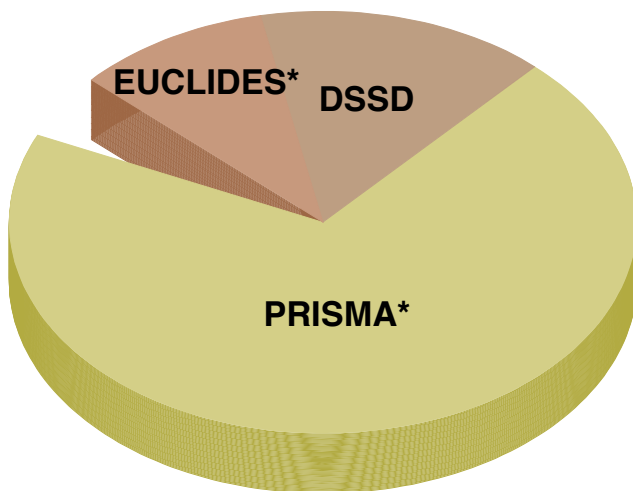
- Experiments involving PRISMA constitute almost one half of the total (plot includes those that use DANTE or LaBr together with PRISMA)
- Good balance between spectroscopy, lifetime measurements (plunger and DSAM), and Coulomb excitation/inelastic scattering; reaction mechanism studies important
- Good representation of most countries of the AGATA collaboration among the spokespersons, with a fair participation of other countries



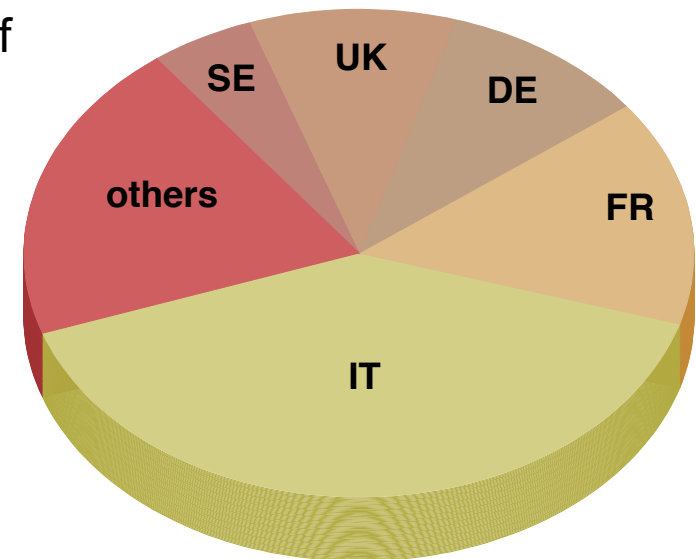


- Projects with PRISMA strongly dominate [some of them also use DANTE (3) or LaBr₃ (2)]
- For the first time no projects with SPIDER
- Many spokespersons from countries outside the AGATA collaboration (Croatia, Korea, China, Canada, US)





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- Many spokespersons from countries outside the AGATA collaboration (Croatia, Korea, China, Canada, US)
- More balanced distribution between the countries if one looks at the first spokespersons only



Quadrupole shapes and shape coexistence Reaction mechanism studies

Shape coexistence and shape isomers related to mp-mh excitations across $Z=40$ (Coulomb excitation of ^{96}Zr) and $Z=50$ (lifetimes in $^{110,112}\text{Sn}$, ^{108}Cd , Coulomb excitation of ^{110}Cd)

Shape coexistence in ^{60}Fe , ^{60}Zn (lifetime measurements) and ^{74}Se (Coulomb excitation)

Quadrupole shapes of neutron-rich Os nuclei from lifetime measurements

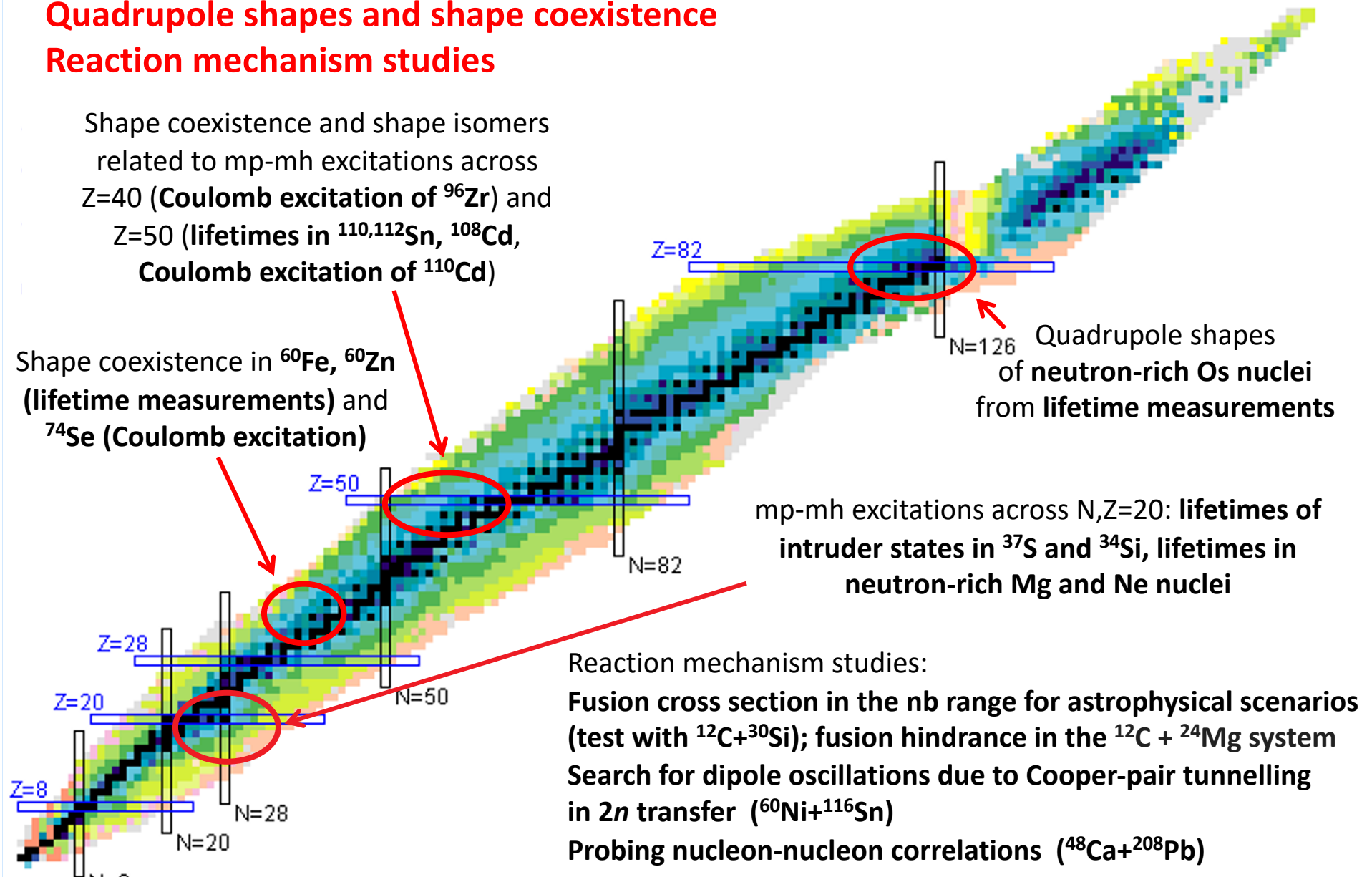
mp-mh excitations across $N, Z=20$: lifetimes of intruder states in ^{37}S and ^{34}Si , lifetimes in neutron-rich Mg and Ne nuclei

Reaction mechanism studies:

Fusion cross section in the nb range for astrophysical scenarios (test with $^{12}\text{C}+^{30}\text{Si}$); fusion hindrance in the $^{12}\text{C} + ^{24}\text{Mg}$ system

Search for dipole oscillations due to Cooper-pair tunnelling in $2n$ transfer ($^{60}\text{Ni}+^{116}\text{Sn}$)

Probing nucleon-nucleon correlations ($^{48}\text{Ca}+^{208}\text{Pb}$)



Collectivity close to closed shells
Octupole correlations
Fundamental symmetries and astrophysics
High-spin states

Spectroscopy of octupole structures in $^{232,234}\text{Pu}$ and $^{224-228}\text{U}$ populated via MNT

High-spin structures in $^{136,137}\text{Nd}$

Octupole collectivity in ^{96}Zr studied via inelastic scattering

Isospin mixing in ^{72}Kr

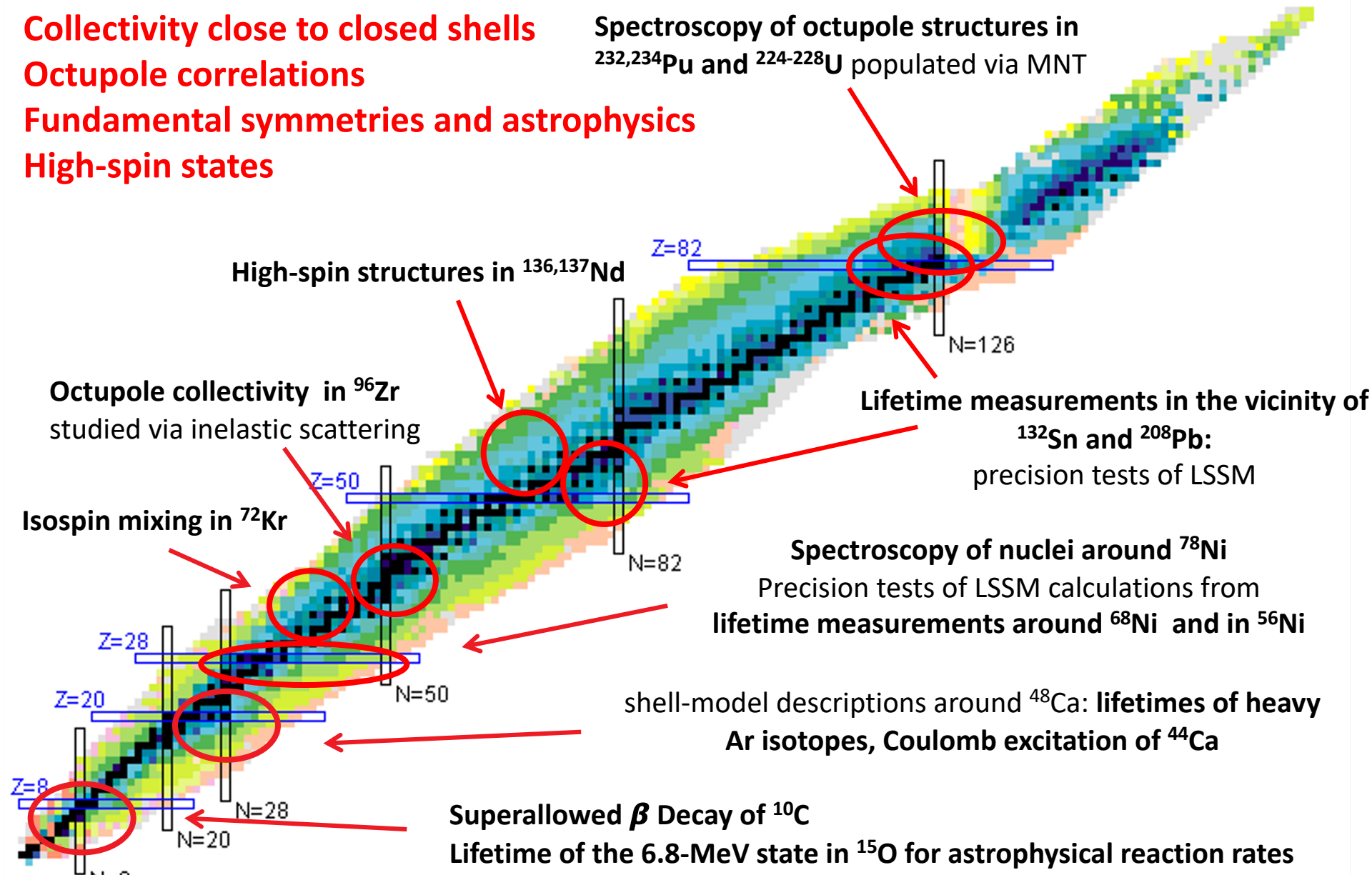
Lifetime measurements in the vicinity of ^{132}Sn and ^{208}Pb : precision tests of LSSM

Spectroscopy of nuclei around ^{78}Ni
 Precision tests of LSSM calculations from lifetime measurements around ^{68}Ni and in ^{56}Ni

shell-model descriptions around ^{48}Ca : lifetimes of heavy Ar isotopes, Coulomb excitation of ^{44}Ca

Superaligned β Decay of ^{10}C

Lifetime of the 6.8-MeV state in ^{15}O for astrophysical reaction rates



Lifetimes in octupole structures in ^{220}Ra

Spectroscopy of deformed structures
in light Eu isotopes

Octupole correlations in $^{110,112}\text{Xe}$
Lifetimes of odd-mass nuclei
close to ^{100}Sn

Z=82

N=126

Lifetime measurements and MNT cross
sections for n-rich nuclei around ^{208}Pb

Octupole collectivity in ^{96}Zr
studied via unsafe Coulomb
excitation

Z=50

N=82

Lifetimes in n-rich Ag and In nuclei

Quest for an isomer in ^{74}Zn

Z=28

N=50

mp-mh excitations in ^{46}Ca (lifetimes)
and ^{46}Ar (spectroscopy)

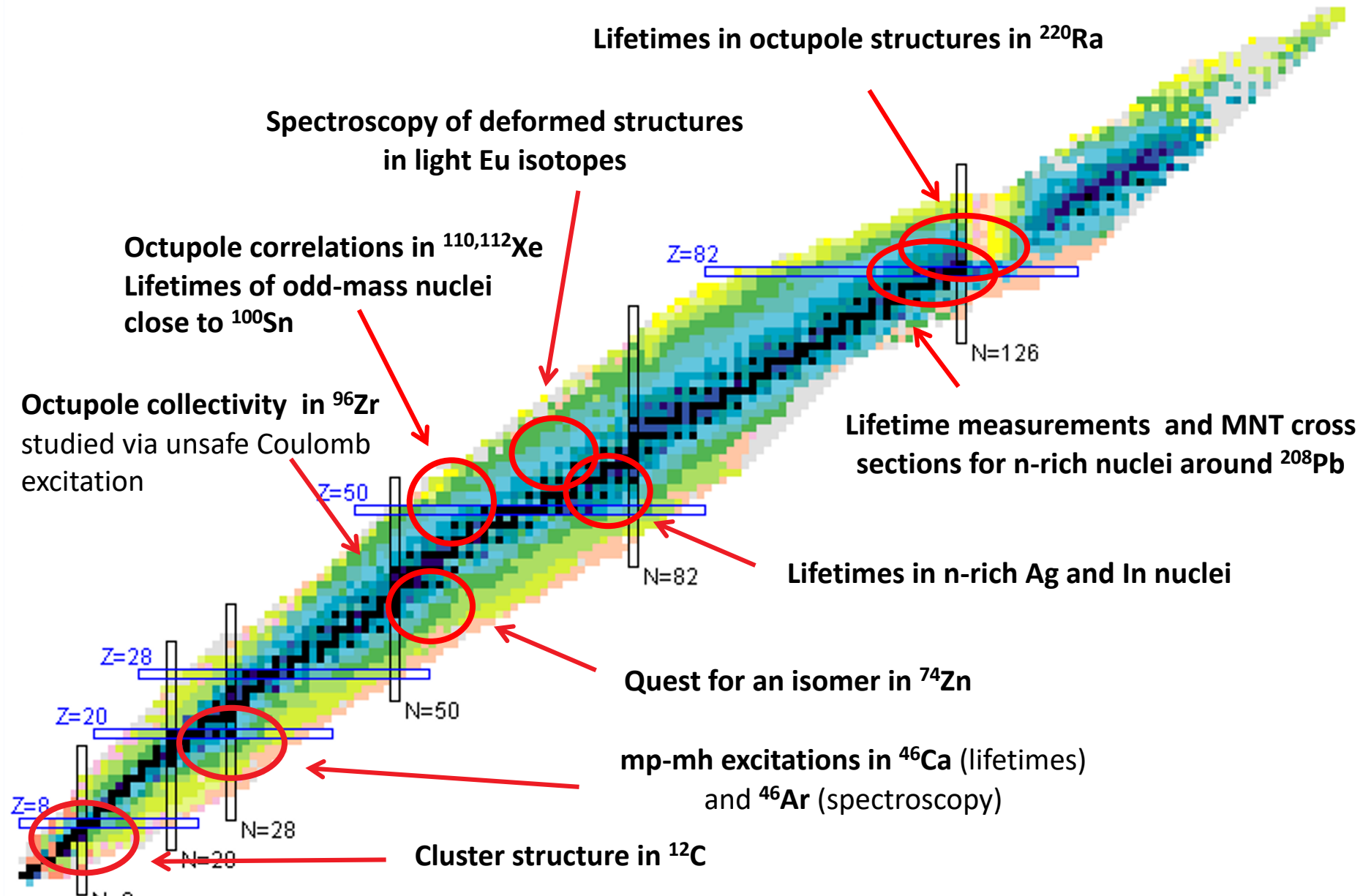
Z=20

N=28

Cluster structure in ^{12}C

Z=8

N=20



- More new projects than at the previous Pre-PAC meeting discussing projects for Tandem-ALPI-PIAVE beams, but fewer projects in total; however, difficult to guess how many projects will be repropose to the PAC
- Interest from researchers outside the AGATA collaboration is steadily increasing
- High-spin studies seem to become a valid option
- Variable level of detail from the proponents; in some cases the technical committee has trouble judging the feasibility due to insufficient information