



SAMURAI Management Plan 2023—

20th Sep. 2023 : SAMURAI Board meeting

14th Jul. 2024 : SAMURAI collaboration meeting

Tomohiro Uesaka (RIKEN)

**Make SAMURAI
more productive and visible**

Main directions

- 1. More SAMURAI experiments**
- 2. Reduction of redundant efforts in detector preparation and data analysis**
- 3. Data sharing within the SAMURAI collaboration**
- 4. Explore new capabilities**
- 5. More conference invitations to young members**

1. More SAMURAI experiments

“At least one SAMURAI campaign every year”

Proposals using a variety of primary beams

**Realization of ^{40}Ar primary beam
(follow-up of Nakamura's LoI)**

Reduction of time and efforts in changing setups

1. More SAMURAI experiments

Done in 2024

Light-ion

^{40}Ar , ^{40}Ca

^{48}Ca

^{70}Zn

^{78}Kr

^{124}Xe

^{238}U

NP2312-SAMURAI73R1	Z. Xiao	Observation of the isovector reorientation effect of polarized deuteron and the constraint of nuclear symmetry energy	$d_{\text{pol}} 190$ MeV/u	4.0+0.5 days
NP2312-SAMURAI77	T. Uesaka	Comprehensive research of cluster formation in medium to heavy nuclei -- ONOKORO Project --	^{78}Kr , ^{124}Xe , ^{238}U , 345 MeV/u	(7 days)
NP2312-SAMURAI75R1	Y. Matsuda	Study of neutron single-particle states in carbon and calcium isotopic chains using (p,pn) reactions	^{48}Ca , SUP(70}Zn 345 MeV/u	6+0.5 days
NP2212-SAMURAI74	K. Miki	Correlations in multi-neutron systems	^{18}O 250 MeV/u	11 +0.5 days
NP2212-SAMURAI66R1	T. Nakamura	Determination of neutron capture reaction cross sections of Cd isotopes at N \geq 82: Part 1	^{238}U , 345 MeV/u	(2.5 days)
NP2212-SAMURAI64R1	S. Kim	Reduction factor study at large isospin asymmetry using the (a,ap) reaction	^{18}O , SUP(40}Ar 345 MeV/u	(9.0 days)
NP2112-SAMURAI65	H. Liu	Search for the first excited 0^+ state in the doubly-magic nucleus ^{54}Ca	^{70}Zn 345 MeV/u	6.5 days
NP2112-SAMURAI69	A. Obertelli	Momentum distribution of deeply-bound nucleons	^{16}O , ^{48}Ca 345 MeV/u	9.5 days
NP2112-SAMURAI68	J. Gibelin	Search for $^{17,18}\text{Be}$	^{48}Ca 345 MeV/u	6.5 days
NP2012-SAMURAI55R1	T. Aumann	Determination of the nn scattering length from a high-resolution measurement of the nn relative-energy spectrum produced in the $^6\text{He}(p,\text{pa})2n$, $t(p,2p)2n$, and $d(^7\text{Li},^7\text{Be})2n$ reactions	^{18}O 345 MeV/u	8.5 days
NP2012-SAMURAI57	T. Uesaka	Cluster and nucleon knockout reaction studies of neutron-rich calcium isotopes	^{70}Zn 345 MeV/u	4 days
NP2012-SAMURAI59	Y. Kondo	Invariant-mass spectroscopy in the vicinity of the possible doubly magic nucleus ^{28}O	^{48}Ca 345 MeV/u	10.5 days

NP2012-SAMURAI63	W. Lynch	Study of density dependence of the symmetry energy with the measurements of charged pion ratio in heavy RI collisions (III)	$^{124,136}\text{Xe}$ 345 MeV/u	9.5 days
NP1912-SAMURAI53	H. Wang	Search for short-range correlated proton-neutron pair in neutron-rich nuclei	^{22}Ne 250 MeV/u	7.5 days
NP1812-SAMURAI43	A.Corsi	Shell evolution at Z =14 around ^{22}Si , mirror of the doubly magic ^{22}O	^{40}Ca 345 MeV/u	4.5 days
NP1812-SAMURAI44	H. Otsu	Cluster structure study on ground and excited states by means of HI-a invariant mass spectroscopy	^{22}Ne 250 MeV/u	5 days
NP1812-SAMURAI33R2	Z.Yang	Study on the cluster structure in light nuclei by using (p,pa) reaction on carbon isotopes $^{12,14,16,18,20}\text{C}$	^{48}Ca 345 MeV/u	5.5 days
NP1812-SAMURAI47	T. Nakamura	Multi-neutron 4n and 6n states in extremely neutron-rich nuclei beyond the neutron drip line	^{18}O 345MeV/u	5 days
NP1712-SAMURAI37R1	T. Aumann	Dipole response of the drip-line nuclei ^{24}O and ^{29}F	^{48}Ca 345MeV/u	6.5 days
NP1712-SAMURAI32R1	M. Sasano	Study of "Island of Asymmetric Fission"	^{238}U 345MeV/u	9 days
NP1612-SAMURAI40	T. Nakamura	Two-neutron correlation measurement for nuclei beyond the neutron drip line	^{48}Ca 345 MeV/u	8.5 days
NP1512-SAMURAI36	N.A. Orr	Search for ^{22}C (2^+), ^{21}B , ^{23}C and ^{25}N : Structure at and beyond the N=16 sub-shell closure	^{48}Ca 345MeV/u	Nov 2016, 3 days out of 6 days
NP1512-SAMURAI35	H.L. Crawford	Invariant Mass Measurement of ^{39}Mg at SAMURAI	^{48}Ca 345 MeV/u	2.5 days

2. Reduction of redundant efforts in detector preparation and data analysis

(Semi-)Automated tuning of electronics without a beam

Well-designed and systematic calibrations

Accumulation/share of previous knowledge

Common data analysis platform

Optimized setup for (p,3p)-(p,p α) combined measurement

Working group(s) led by young local members

Budget request to Nishina

Data sharing within the SAMURAI collaboration

“A system to open sleeping data to the SAMURAI collaboration members”

**Balance between rights of the experimental group
and efficient use of data**

Carefully designed rule is necessary

Explore new capabilities

Decay charged particles

More decay neutron detectors

Knocked-out neutron detectors

Efficient and well-planned use of
HIME

LAMPS-NDA **IBS-Nishina collaborations**

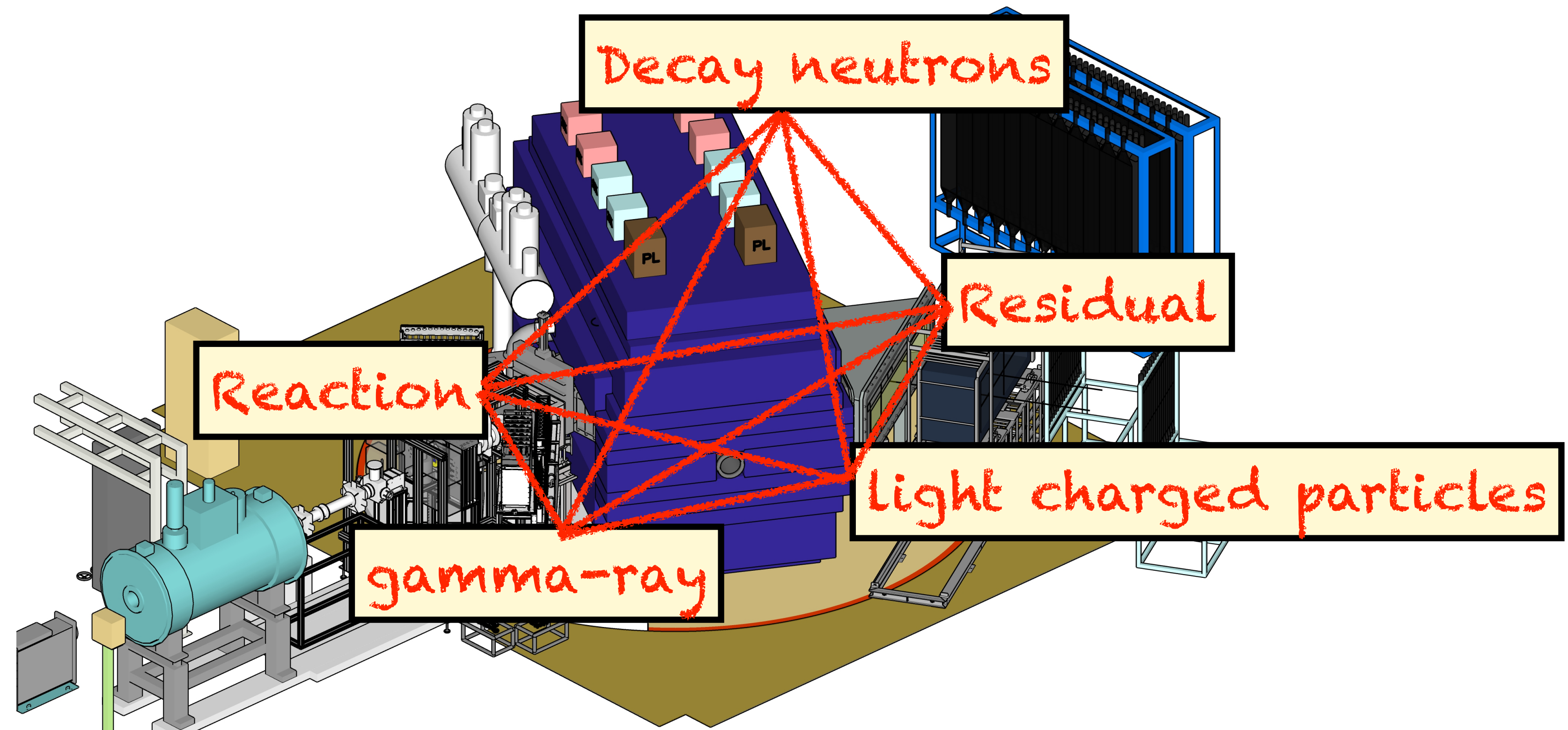
Peking-detector

Nakamura-san's new detector



SAMURAI Next

Best use of the large-acceptance capability of SAMURAI
Multidimensional data with guaranteed reliability
Platforms for reliable and quick data-analysis and simulation



SAMURAI Next

New information from **multidimensional data**

Missing-mass (TOGAXSI/CATANA)

× invariant-mass/decay

Correlations among multi-neutrons

Decay asymmetry measurements

etc. etc.

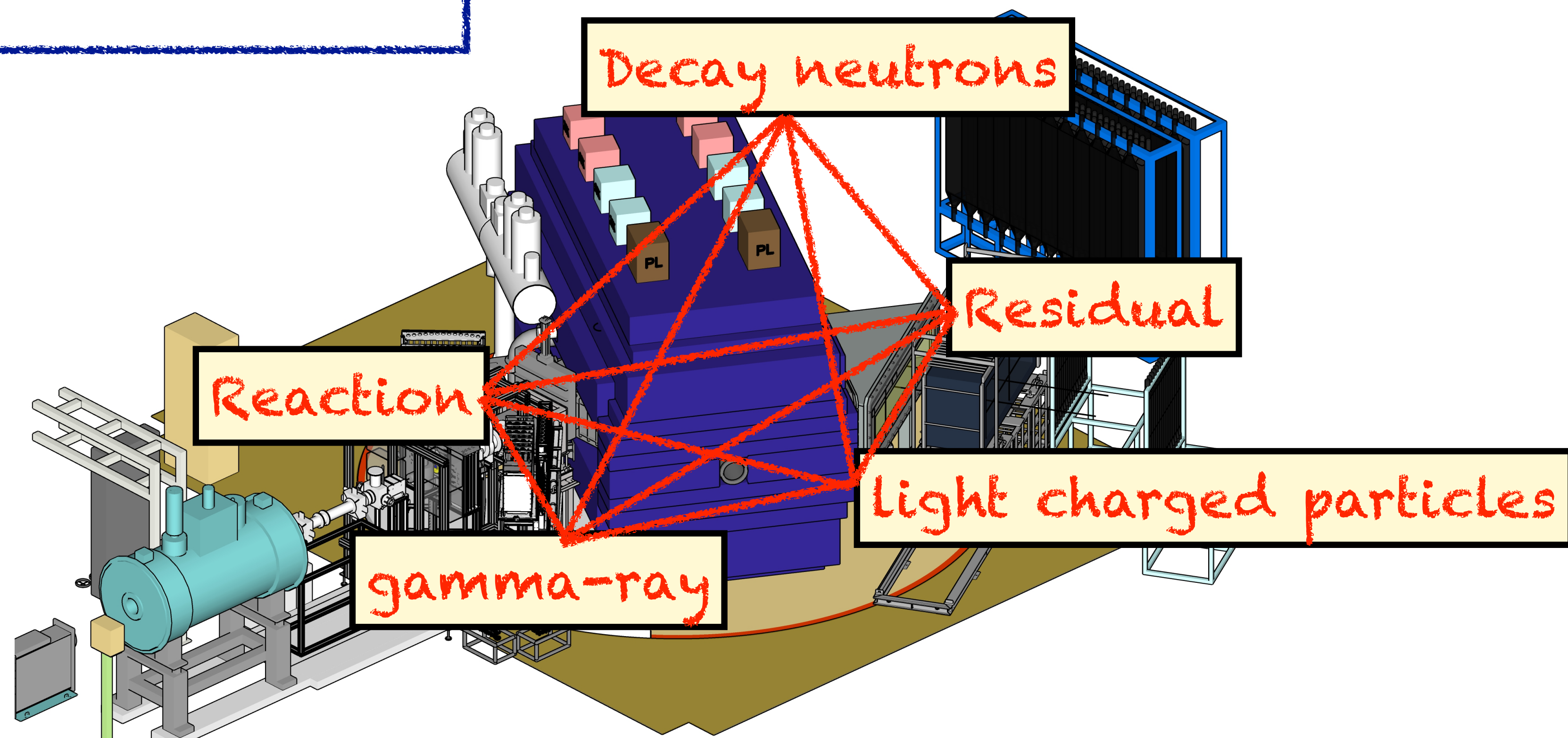
New Detectors to reinforce the capability

LAMPS-NDA

HIME

PKU-AMDA

Nakamura-san's



More conference invitations to young members

**Coherent efforts of senior members as
conference organizer/committee members**

Common presentation material so that anyone can represent SAMURAI

Working groups

1. CATANA-STRASSE & TOGAXSI optimization for $(p,3p)$ - $(p,p\alpha)$

Miki, Honga, Kubota, . . .

2. Optimization of Scintillation detectors (HIME/LAMPS/Peking)

Kondo, Koyama, Siwei, Somebody from IBS

3. Upgrade of DAQ electronics, Data analysis platform

Kubota, Isobe, Kondo