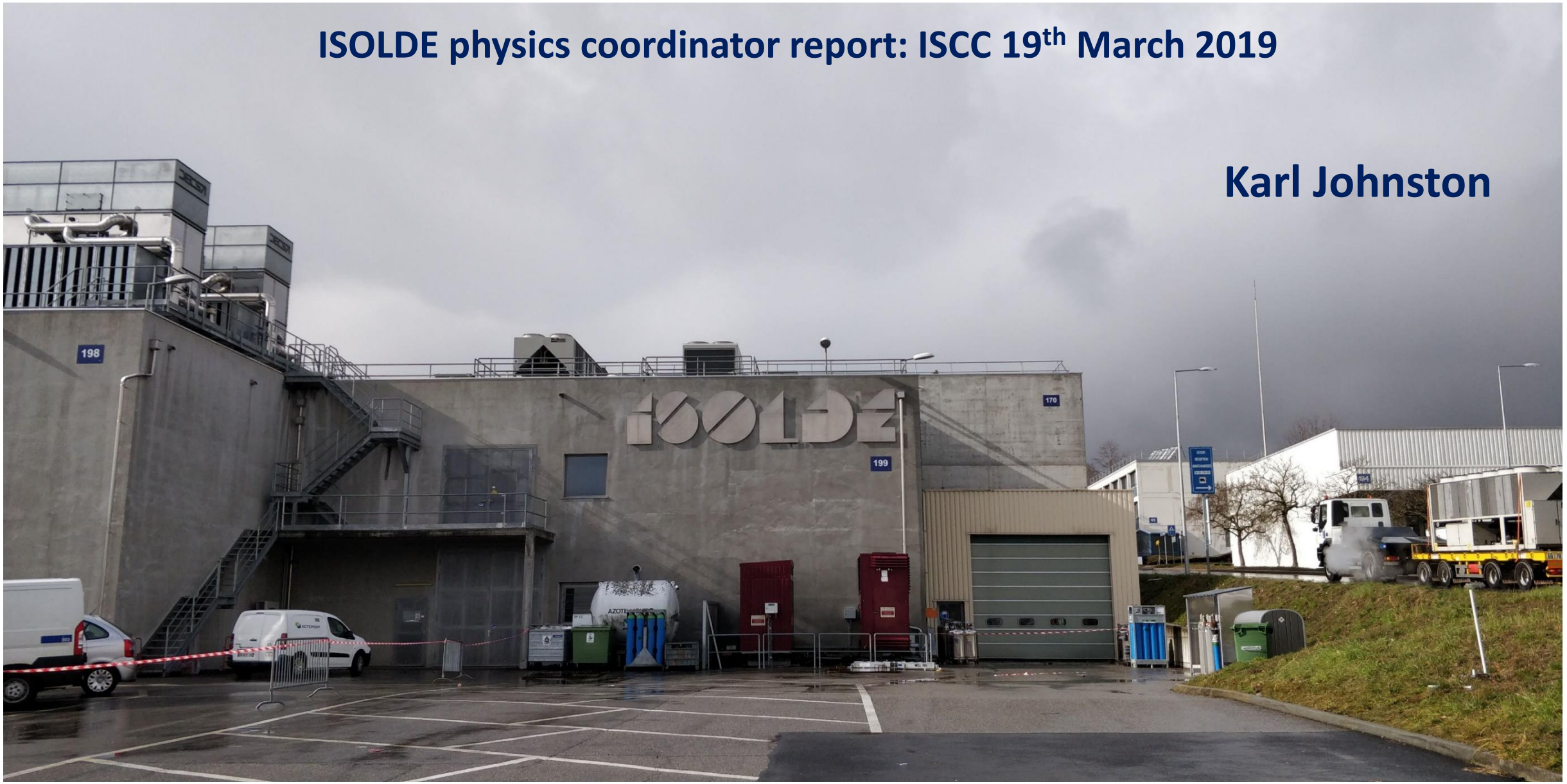
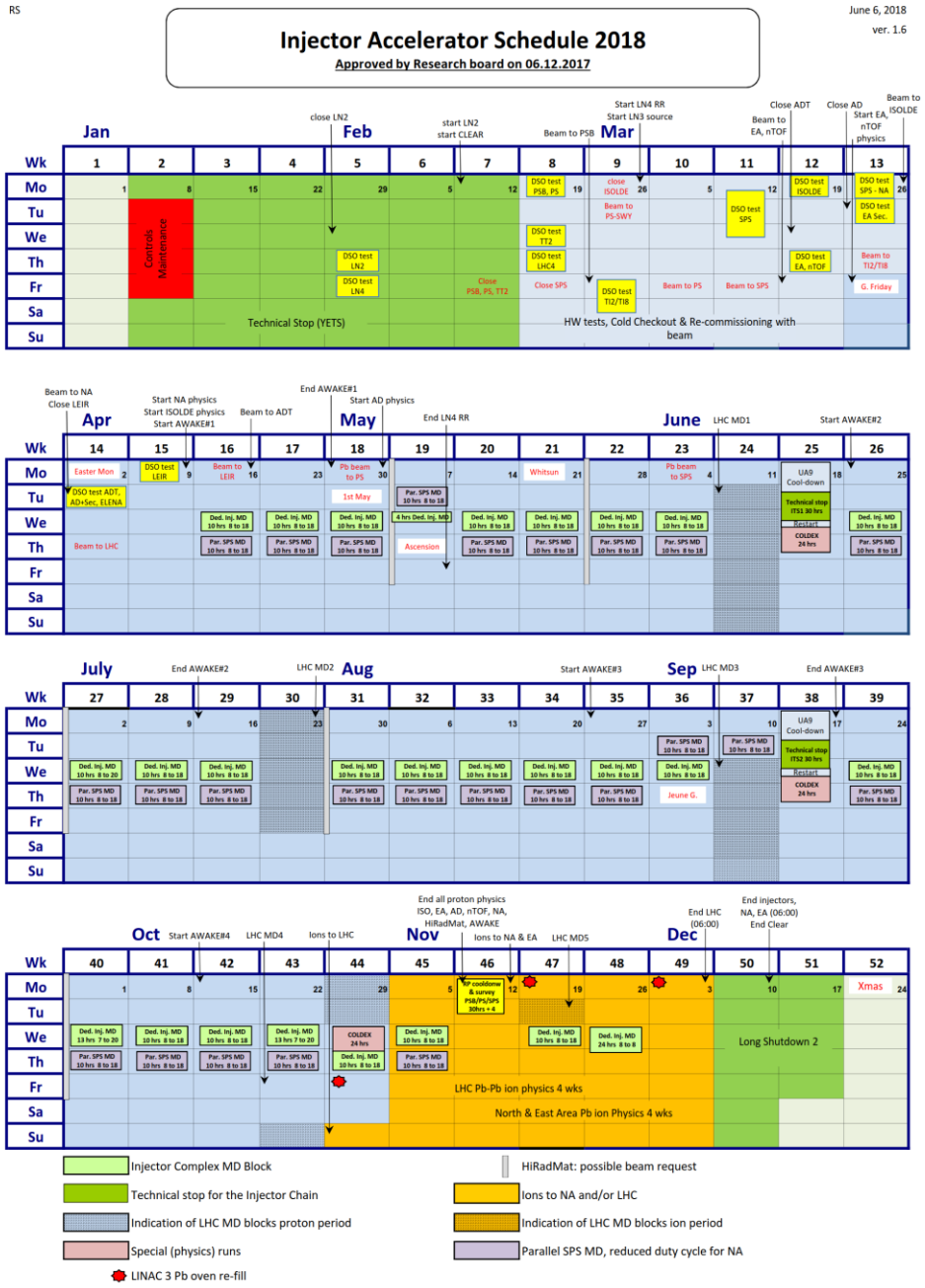
# ISOLDE physics coordinator report: ISCC 19th March 2019




Karl Johnston

- Summary of end of 2018 physics
- Shift overview
- Schedule tools for the future
- Technicians




Protons available for physics to ISOLDE from 9th April – 12th November 2018.
(no extension possible)
1 week less physics with protons than 2017
217 days compared to 224

HIE ISOLDE was ready from 9th July after 90 days of LE physics

HIE: Started with a Coulomb excitation block then focused on the reaction experiments
More setup time often needed for these plus more varied setups.
All three HIE beamlines in use e.g. ISS calibrating/commissioning while Miniball ran CE, installations ongoing at XT03.

Low energy runs allowed for some breathing space (and exchange of EBIS cathode). To allow for best use of machine, some experiments ran in parallel/invisible mode e.g. Solid state physics: one dedicated run in 2018 i.e. blocking CBL and with new target.

Focus on LOIS at end of year: Winter physics programme began in Week 46 for HIE and CRIS

# GPS schedule 2018

| | April | | | | May | | | | June | | | | | July | | | | | August | | | | September | | | | October | | | | November | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| TU | | TISD | | May-01 | EC-SLI | MD:FTS | | | IS610 | | Tech Stop | Medical isotopes | | | | #665 53Mn | | | | | | IS634 EC-SLI | | Tech stop | #619 Pb VD5 | | | #534 Sn VD5 | | | Prep for winter |
| WE | | TISD | | #599 Ti foils | IS634 | | | | | ISBM | #655 Ta - W | IS528 IS638 | #659 UC VD7 | | | | | | | | IS629: 11Be @ 7MeV/u (IS655) XT03 | Jeune | | (IS655) (IS604) | IS585 | | | | | (IS655) | Physics |
| TH | #513/ #650 | | | | Ascension | | | | #634 LIST | $^{22}$Mg to LA1 | | | | IS644 (LOI205) | IS644: 4.8MeV/u (IS506) | #632 ThC VD7 | IS552: 4.1MeV/u | #650/513MWCNT | XT03 IS616: 4.5MeV/u | #635 UC Ta | | IS576 IS578 IS630 IS648 IS653 | | | IS631 206Hg @ ~ 7.5MeV/u | Gandalph Negative run: IS615 | IS611 IS640 IS647 IS652 IS653 | XT03 IS561 9Li @ 7.5MeV/u | LOI198 IS637 | (separate file) |
| FR | | | | | | #653 UC - Ta n | | | | IS614 | IS528 | | | | | | | | | | | | | | | | | | | | | |
| SA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SU | IS633 | 8B: IDS | 111Cd | | RILIS: Mg | | RILIS: Cu | | RILIS: In | RILIS: Mg | RILIS: Dy | RILIS: Dy | | 96Kr / 212Rn | | | 22x Rn | | 8B | | RILIS: Be | RILIS: Be | RILIS: Mn | | 199Hg | | RILIS: Hg | RILIS: At | 111Cd | | RILIS: Ac | |
| | | | | | | | | | | | (night-time) | | | | | | | | | | | | | | | | MD on HIE | | | | (GLM/GHM/LA1) | |

ISOLDE Decay Station

Cu FT
In FT
Bi FT/in-source
Tl/Hg SPEDE

ISOL TRAP

Sc/In
70Br

CRIS

n-def In
n-rich K
n-def Sn

COLLAPS

Ge + S
Sc
n-rich Sb

Medical Biophysics

119Sb for biopac
149Tb/152Tb
199Hg
Ac beam development

β-NMR on liquids

ISOLDE Solid State Physics

Parallel Hg/Cd

EC-SLI

Mg,Be
Mn, Ac

Mössbauer Collaboration at ISOLDE/CERN

Good Mn run

Travelling

8B @ LA1
22Mg @ LA1
Ac development
(2 setups)
GANDALPH (-ve)

TISD/MD

-ve beams
LIST
New n-conv
RFQ MD
HIE MD
FTS commissioning
(no LIEBE)

Later....

XT03

# HRS schedule 2018

| | April | | | | May | | | | June | | | | | July | | | | | August | | | | September | | | | October | | | | November | |
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| TU | | | | May-01 | | | | | #626 Ta - W | TBC | Tech Stop | Machine development | | | #637 UC W (+CF4 | IS552 IS553: 4.1MeV/u | #631 LaC Ta | IS562: 4.4MeV/u | | | | Jeune | IS654 | Tech stop | | | | (tbc) UC | TISD | TISD | Prep for winter |
| WE | | | | TISD | | | | | | | | | | | | | | | #639 LaC Ta | | #643 UC + 3 4S | 134Sn @ 7.33MeV/u | | | | | | | #672 CaO VD7 | | |
| TH | CRIS | #627 Ta - W | ISOL TRAP | COLLAPS | Ascension | | | CRIS | | | | | ISOL DECAY STATION | | | | | | | CRIS | | | #623 SiC | IS651 28Mg @ 9.5MeV/u | IS621 28Mg@9.5 MeV/u | COLLAPS | | tuning IDS VITO | | IS645 | Physics | |
| FR | | | | | ISOL TRAP | | #654 UC - W | | COLLAPS | | Machine development | | IS650 IS637 IS608 | | | | | | | | | | | | | | | | | IS641 end Sat night | | WISArD | (separate file) |
| SA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SU | IS639 | | IS532 | IS623 | IS642 | IS645 | | IS620 | IS649 | | | | RILIS: Bi | | | 22xRa/142Ba | | Sn RILIS | | Sn RILIS | | 134Sn+34S | | RILIS: Mg | | RILIS: Sb | | | RILIS: Tl | | LOI172 | RILIS: for TISD | |
| | In RILIS | | Sc RILIS | RILIS test | 70Br | 26Na | | K beams | Sc RILIS | | | | | | | | | Sn RILIS | | | | | | | | | | | | | | | |
| | (#640 LaC - n) | | In RILIS | Ge 34S | | | | | | | | | | | | | | | | | | | | | | | | MD on HIE | | | | | |

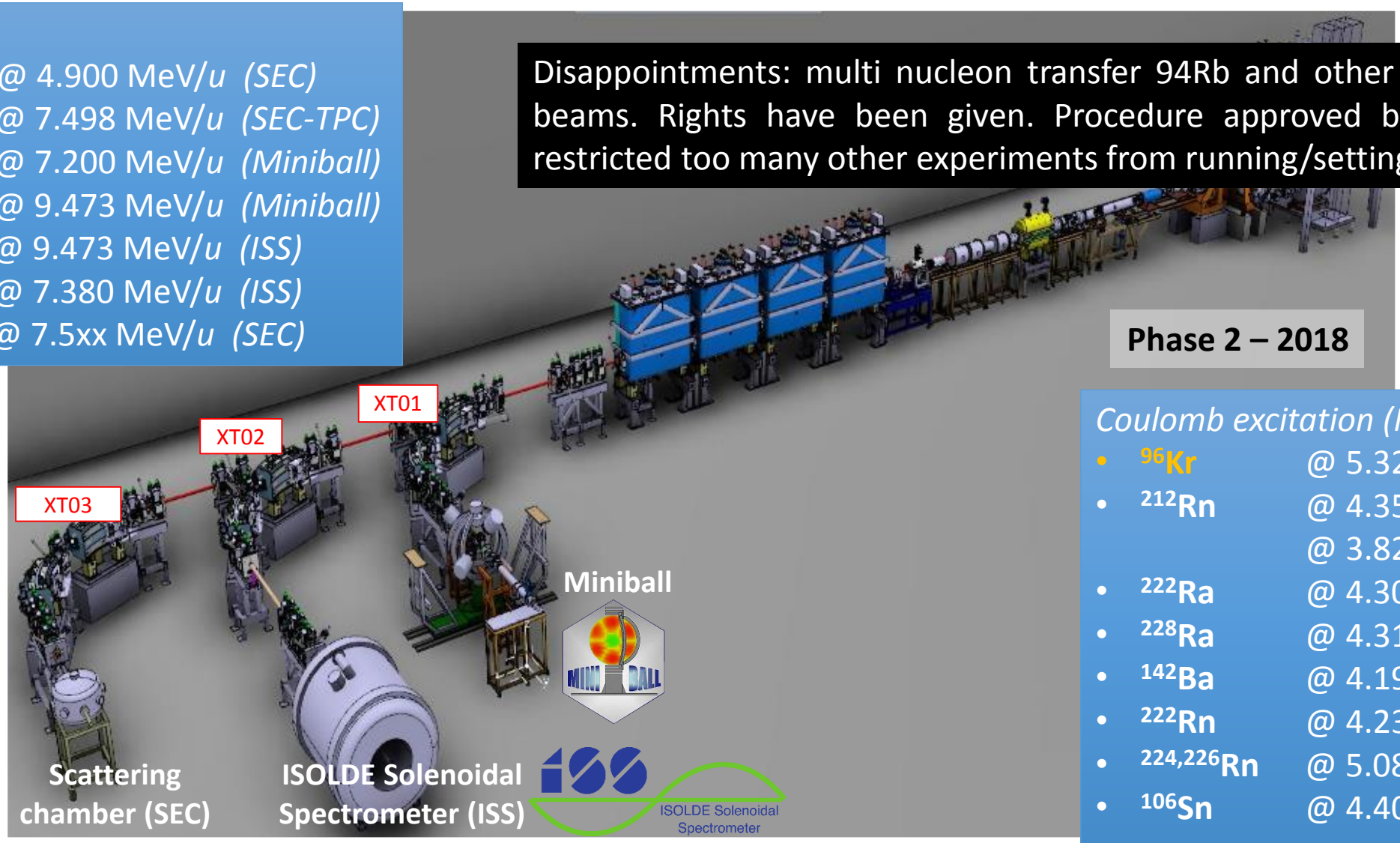
# HIE-ISOLDE EXPERIMENTS 2018

reaching 9.5 MeV/u with HIE-ISOLDE

*Reactions:*

- $^{8}$B($^{64}$Zn) @ 4.900 MeV/*u* *(SEC)*
- $^{11}$Be(decay) @ 7.498 MeV/*u* *(SEC-TPC)*
- $^{132,134}$Sn(*d,p*) @ 7.200 MeV/*u* *(Miniball)*
- $^{28}$Mg(*t,p*) @ 9.473 MeV/*u* *(Miniball)*
- $^{28}$Mg(*d,p*) @ 9.473 MeV/*u* *(ISS)*
- $^{206}$Hg(*d,p*) @ 7.380 MeV/*u* *(ISS)*
- $^{9}$Li(*t,p*) @ 7.5xx MeV/*u* *(SEC)*

Disappointments: multi nucleon transfer 94Rb and other strong primary beams. Rights have been given. Procedure approved but would have restricted too many other experiments from running/setting up in 2018.

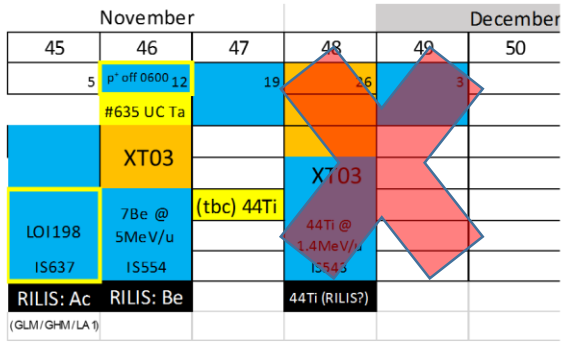



**Phase 2 – 2018**

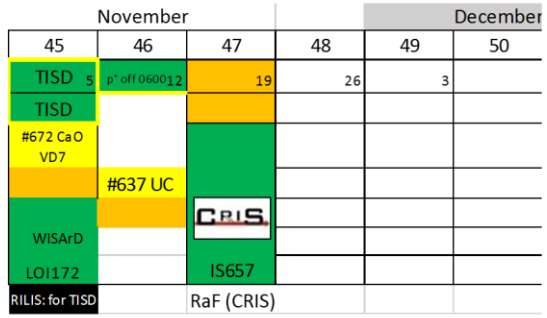
*Coulomb excitation (Miniball):*

- $^{96}$Kr @ 5.325 MeV/*u*
- $^{212}$Rn @ 4.355 MeV/*u*
  @ 3.824 MeV/*u*
- $^{222}$Ra @ 4.305 MeV/*u*
- $^{228}$Ra @ 4.310 MeV/*u*
- $^{142}$Ba @ 4.190 MeV/*u*
- $^{222}$Rn @ 4.230 MeV/*u*
- $^{224,226}$Rn @ 5.080 MeV/*u*
- $^{106}$Sn @ 4.404 MeV/*u*

# GPS




# HRS





KJ: 26.10.18

**Winter physics programme:**

7Be @ 5MeV/u to XT03 (similar setup to recently used 9Li run)

Target irradiated in October (cold). Be mass marker.

RaF for CRIS: target with CF4 leak irradiated at MEDICIS.

44TI for Edinburgh chamber (similar to 59Cu in 2017). Doubts over the efficiency of the ion source resulted in this being cancelled (CRIS continued to run until the very end!)

Very successful and smooth campaign with Be and RaF.

# ISOLDE Schedule 2018: weeks 15 – 46

## GPS schedule 2018

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| FR | | IS633 | IS611 IS640 IS647 IS652 IS653 | | | # 653 UC - Ta n | IS622 | | #634 LIST | IS614 | IS528 | | | IS644 (LOI205) | IS644: 4.8MeV/u (IS506) | #632 ThC VD7 | IS552: 4.1MeV/u | | | | | | | | | | | | | | | |
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| SU | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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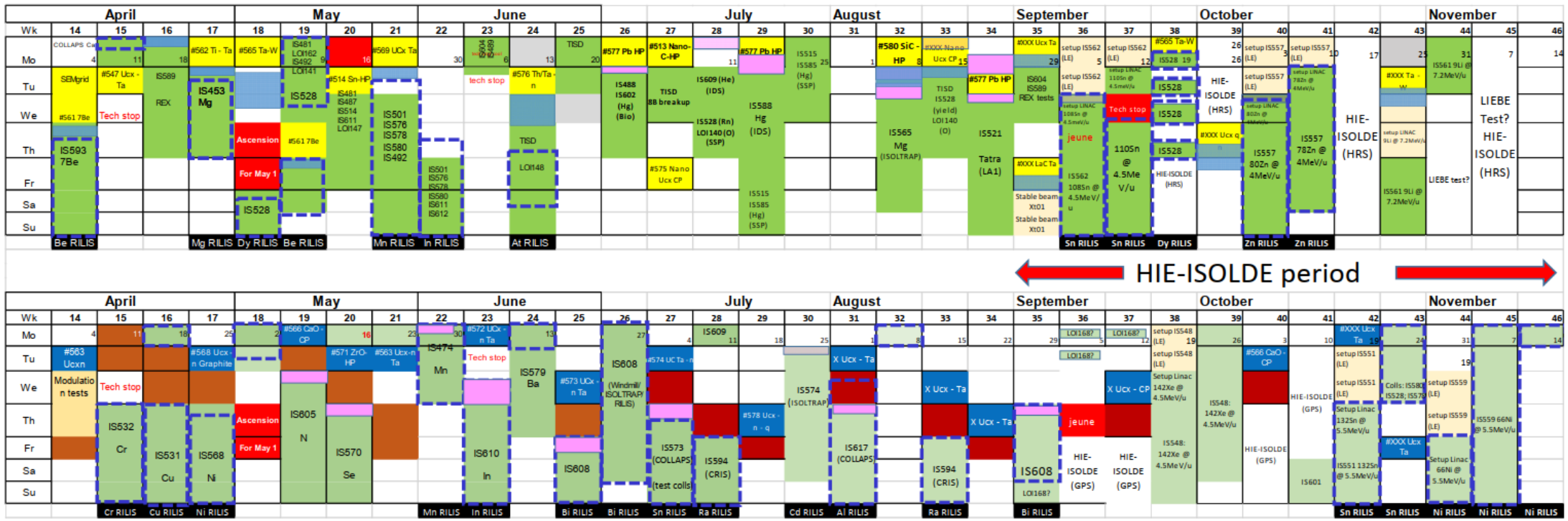
| Target change | CERN holiday | Setting up/proton scan/yield | Physics GPS | Physics HRS | RILIS run |
|---|---|---|---|---|---|

KJ: 08.10.18

# ISOLDE SCHEDULE 2016

## GPS

(Weeks 14-46)



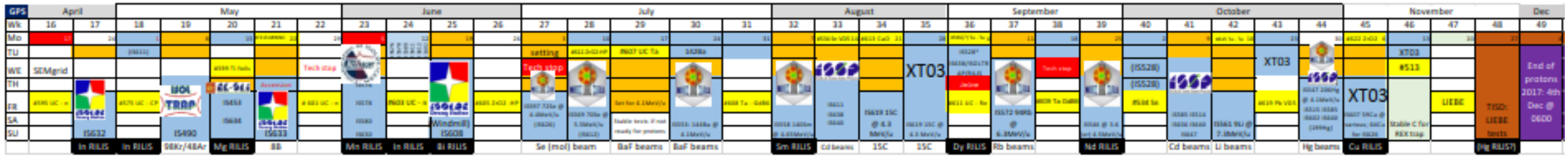

## HRS

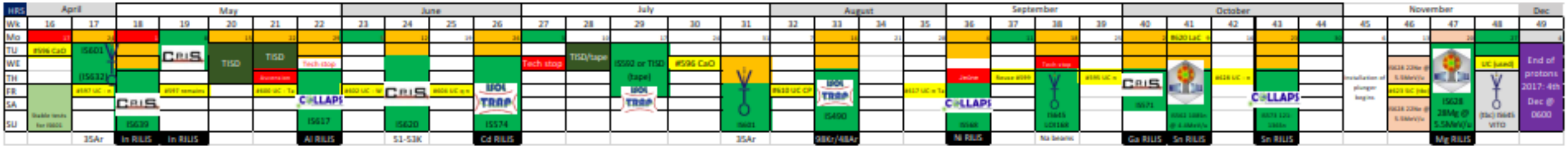
| Target change GPS | Target change HRS | CERN holiday | Setting up HRS | Setting up GPS | Physics HRS | Physics GPS | RILIS run | Proton Scan Yields |
|---|---|---|---|---|---|---|---|---|

Reserve for HIE:
- IS569
- IS607

KJ 28.07.16

# ISOLDE Schedule 2017: weeks 16 - 48




Target change

CERN holiday

Setting up/proton scan/yield

Physics GPS

Physics HRS

KJ: 06.10.17

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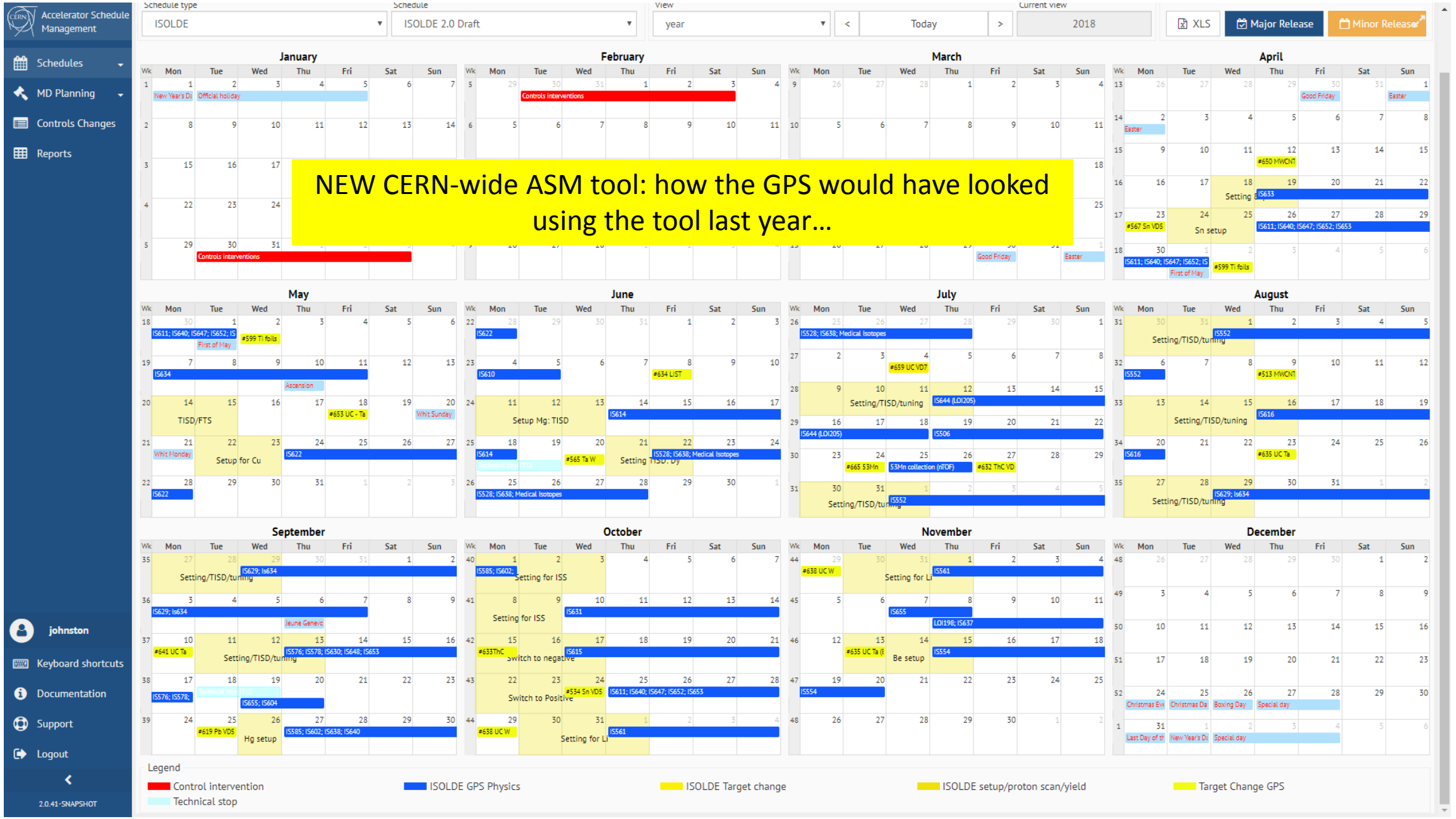
KJ: 08.10.18


Accelerator Schedule Management
Schedules
MD Planning
Controls Changes
Reports
johnston
Keyboard shortcuts
Documentation
Support
Logout
2.0.41-SNAPSHOT
Schedule type
ISOLDE
Schedule
ISOLDE 2.0 Draft
View
year
Today
Current view
2018
XLS
Major Release
Minor Release
NEW CERN-wide ASM tool: how the GPS would have looked using the tool last year…
January
February
March
April
May
June
July
August
September
October
November
December
Legend
Control intervention
ISOLDE GPS Physics
ISOLDE Target change
ISOLDE setup/proton scan/yield
Target Change GPS
Technical stop

| | Apr | | | May | | | June | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WK | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| Mo | Easter | 9 | 16 | #567 Sn VD5 | 30 | IS634 Ascension | TISD/FTS | Whit Monday | 28 | IS610 | 11 | Technical stop ITS1 | 25 |
| Tu | | | | Sn setup | First of May | | | Setup for Cu | | | Setup Mg: TISD | | |
| We | | | Setting 88/TISD | | #599 Ti foils | | | | | | | #565 Ta W | |
| Th | | #650 MWCNT | | | | | | | | | | Setting TISD: Dy | |
| Fr | | | | | | | #653 UC - Ta n | | | #634 LIST | | IS528; IS638; Medical Isotopes | |
| Sa | | | IS633 | | | | | IS622 | | | IS614 | | |
| Su | | | | IS611; IS640; IS647; IS652; IS653 | | | Whit Sunday | | | | | | |

| | July | | | Aug | | | Sep | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WK | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| Mo | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 | 3 | #641 UC Ta | 17 | 24 |
| Tu | | Setting/TISD/tuning | | #665 53Mn | Setting/TISD/tuning | | Setting/TISD/tuning | | Setting/TISD/tuning | | | Technical stop ITS2 | #619 Pb VD5 |
| We | #659 UC VD7 | | | 53Mn collection (nTOF) | | | | | IS629; IS634 | Jeune Genevois | Setting/TISD/tuning | | Hg setup |
| Th | | IS644 (LOI205) | | | | #513 MWCNT | | #635 UC Ta | | | | IS655; IS604 | |
| Fr | | | | #632 ThC VD7 | | | | | | | | | |
| Sa | | | IS506 | | IS552 | | | | | | IS576; IS578; IS630; IS648; IS653 | | IS585; IS602; IS638; IS640 |
| Su | | | | | | | IS616 | | | | | | |

| | Oct | | | Nov | | | Dec | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WK | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| Mo | 1 | 8 | #633ThC | 22 | #638 UC W | 5 | 12 | 19 | 26 | 3 | 10 | 17 | Christmas Eve |
| Tu | Setting for ISS | Setting for ISS | Switch to negative | Switch to Positive | | | #635 UC Ta (Be) | | | | | | Christmas Day |
| We | | | | #534 Sn VD5 | Setting for Li | IS655 | Be setup | | | | | | Boxing Day |
| Th | | | | | | | | | | | | | Special day |
| Fr | | | | | | | | | | | | | |
| Sa | | IS631 | IS615 | IS611; IS640; IS647; IS652; IS653 | IS561 | LOI198; IS637 | | | | | | | |
| Su | | | | | | | IS554 | | | | | | |

Target Change GPS (3d 0h)
Control intervention (5d 0h)
Official Holidays (5d 0h)
ISOLDE GPS Physics (100d 14h)
ISOLDE setup/proton scan/yield (38d 6h)
ISOLDE Target change (0d 4h)
Technical stop (3d 8h)

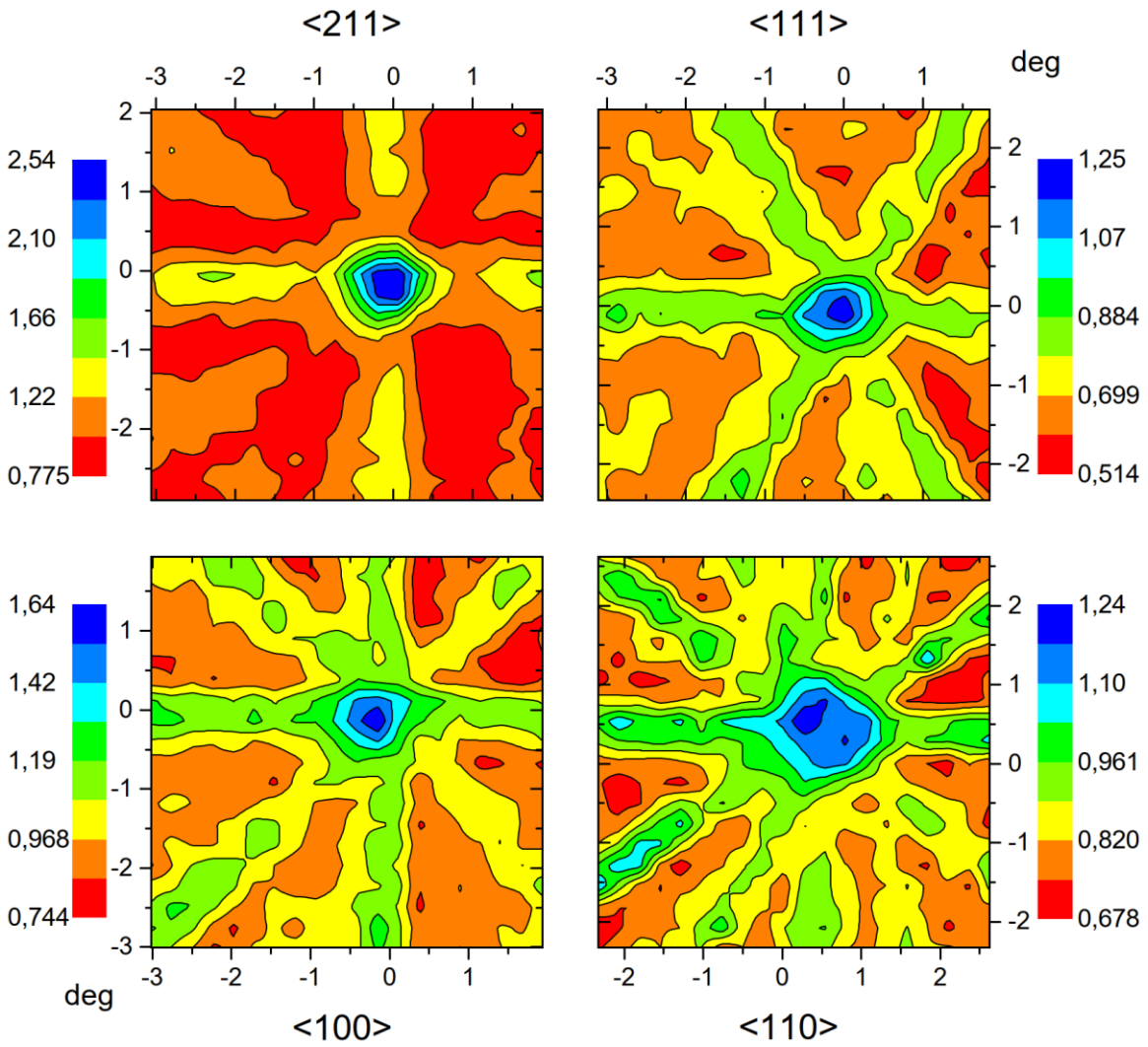
Example of how schedule is represented in excel (colour choice can be worked on…)

Advantages: instant output to excel format etc….will aid for schedule updates and weekly planning.

Ease of use has improved considerably since the early version in 2018. Now fit for purpose and will be used for schedules after LS2 (perhaps also for stable runs in 2020).

May still produce the existing one page ISOLDE schedule if this

# Thorium clock: LOI198




Study of isomeric level by removing IC decay path. Check this with implantation into CaF (wide band gap material)

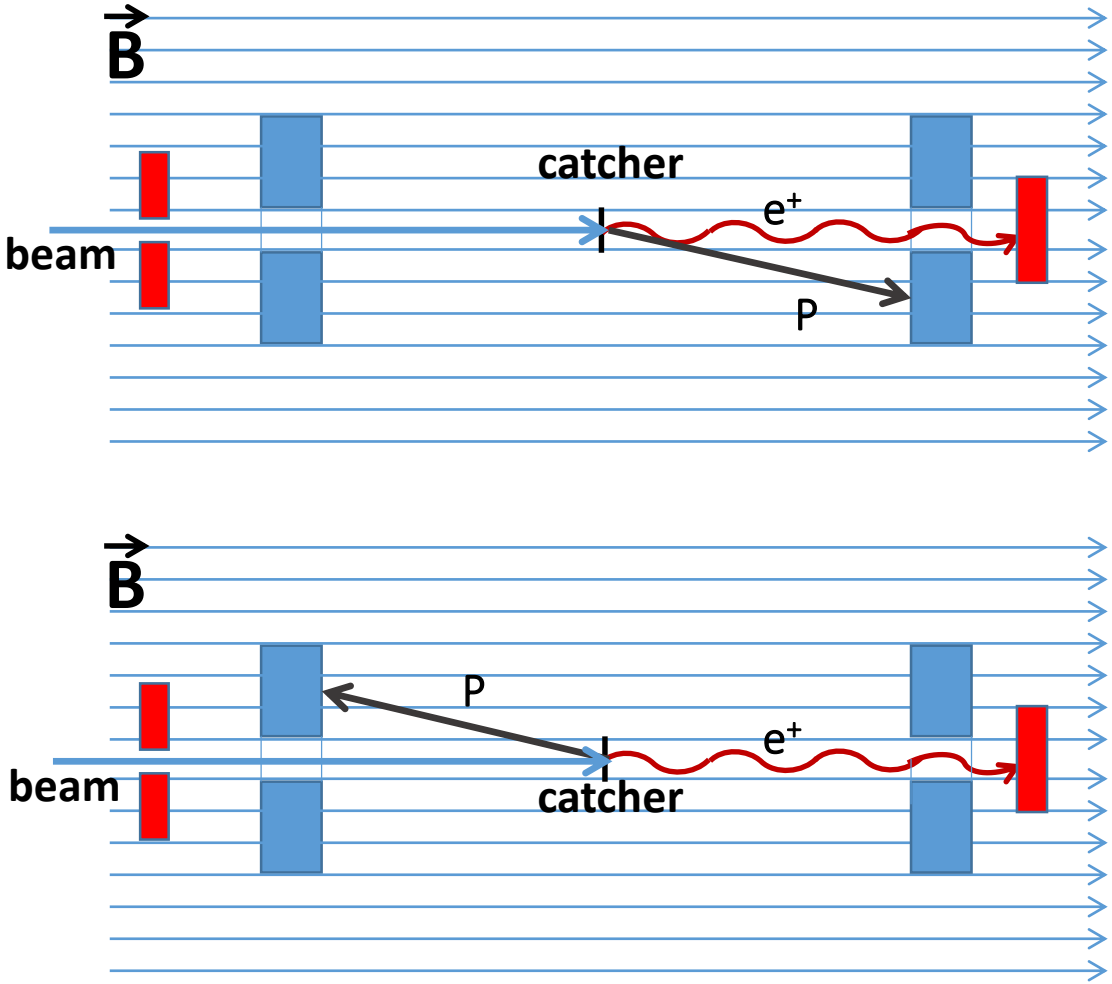
Preliminary data indicate that significant fraction on substitutional sites: study of isomer possible.

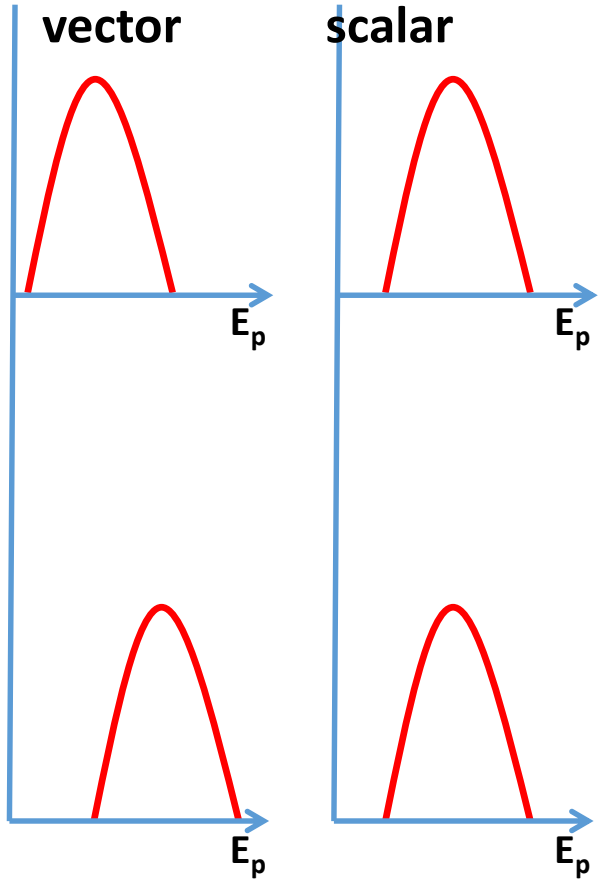
Complemented with new setup to measure low energy conversion electrons…analysis ongoing.

# WISArD = Weak-interaction studies with Ar32 decay

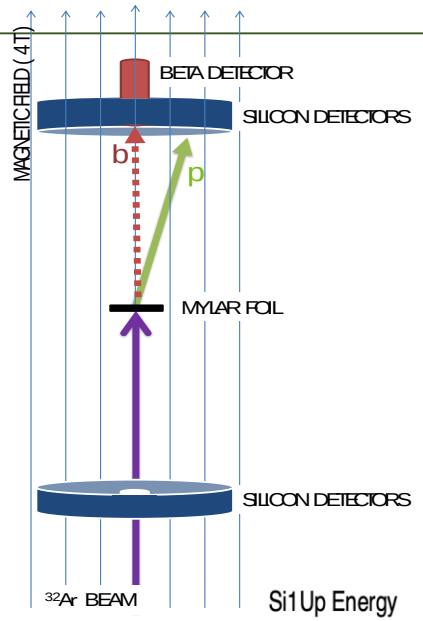
## coll. Bordeaux, Leuven, LPC Caen, NPI-Prague

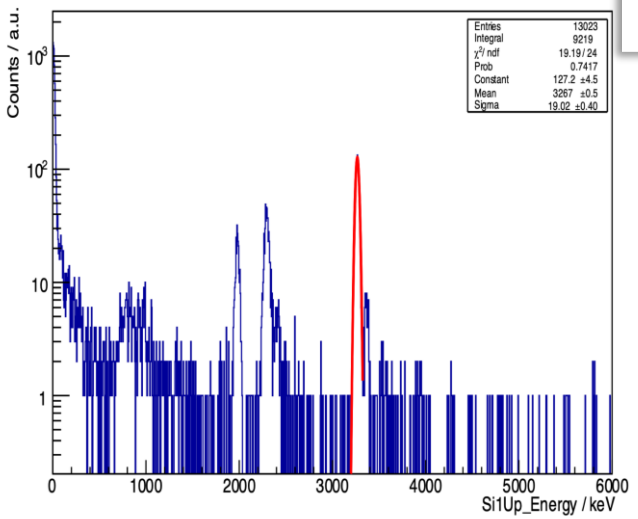
➔ Measure kinematic shift using β-p coincidences in β-delayed p decay



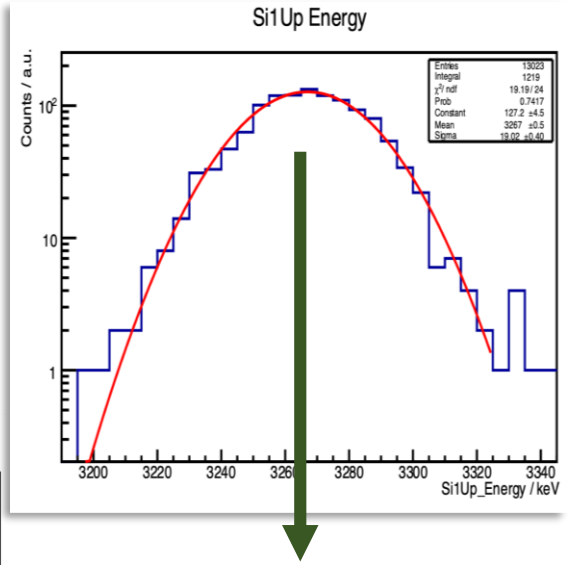



# Online proton spectra from the IAS after the $\beta$–decay of $^{32}$Ar



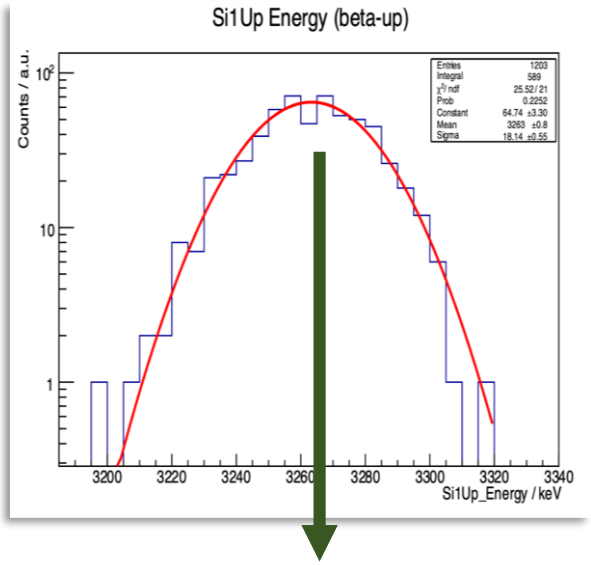




## No coincidence




**3267(0.5)** keV

## In Coincidence with $e^+$

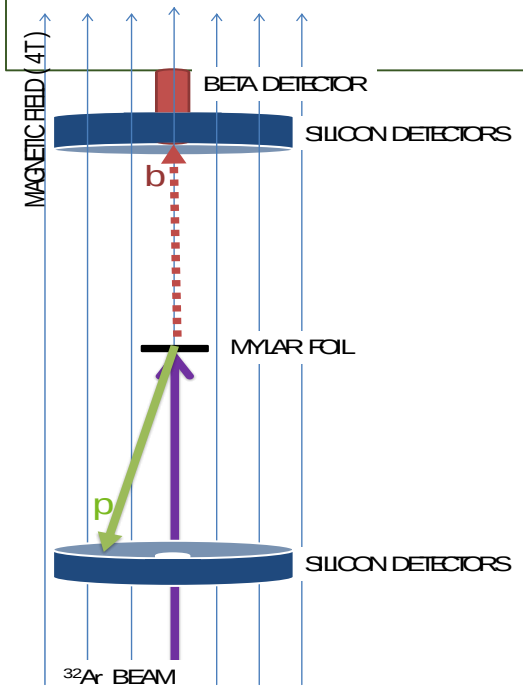


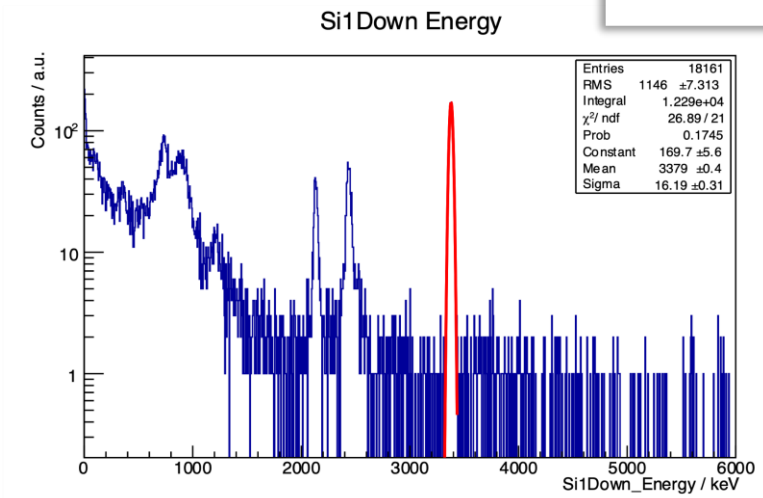

**3263(0.8)** keV

# PRELIMINARY

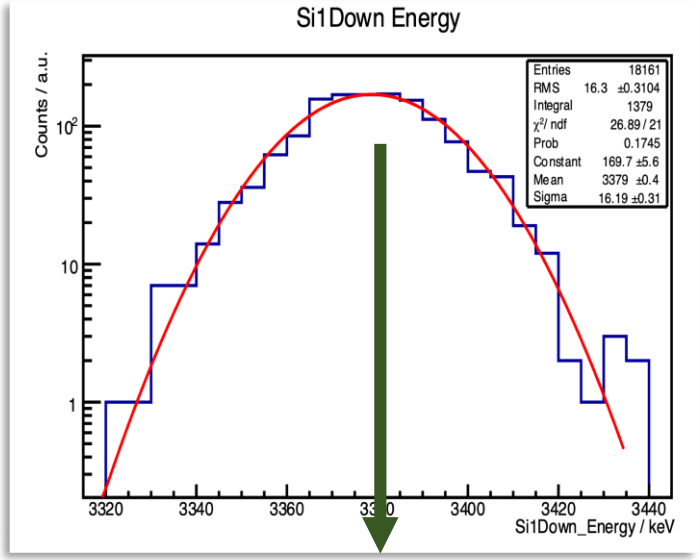
Positron up → recoil nucleus down → proton emitted upwards from downwards moving nucleus → lower energy

# Online proton spectra from the IAS after the $\beta$–decay of $^{32}$Ar



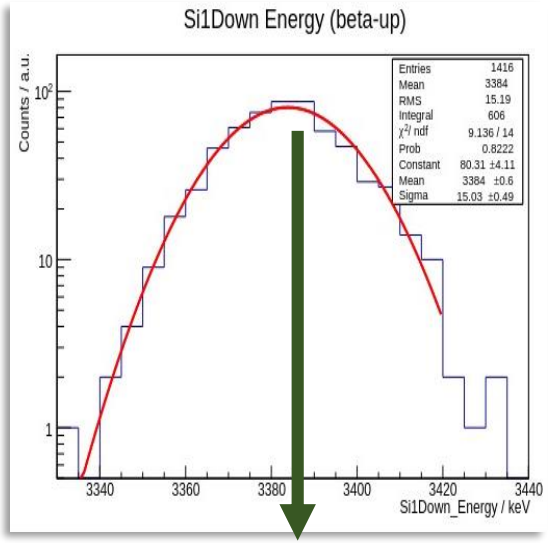




**No coincidence**




**3379(0.4) keV**

**In Coincidence with $e^+$**




**3384(0.6) keV**

## PRELIMINARY

Positron up → recoil nucleus down → proton emitted downwards from downwards moving nucleus → higher energy

# Motivation

## BSM Physics

- Fundamental symmetries
- Matter – Antimatter
- Dark Matter / energy
- New forces/particles
- Neutrino properties

## Nuclear structure

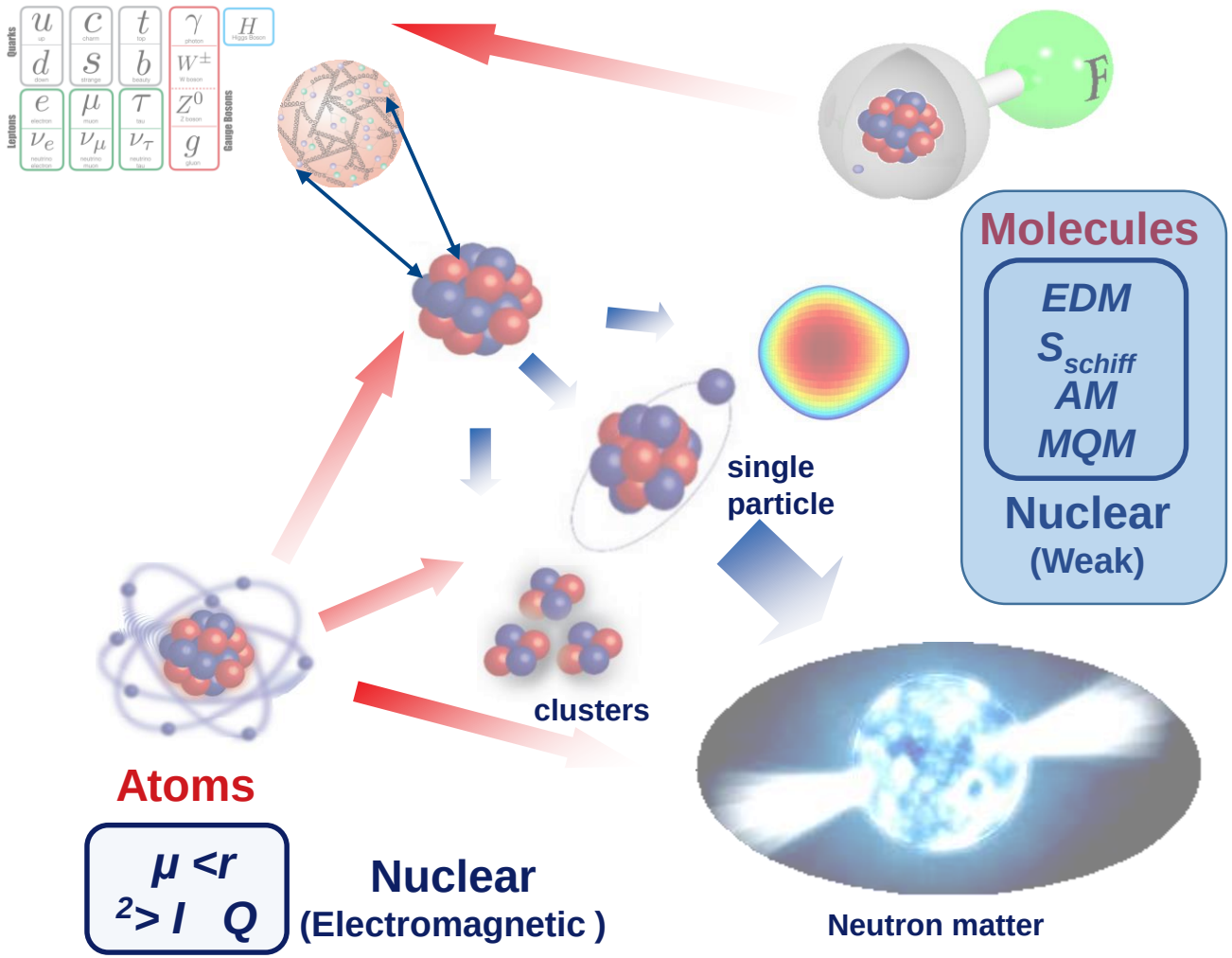
- Nucleons/Nuclei from QCD
- Emergence of nuclear phenomena

## Astrophysics

- Nature of neutron stars and dense nuclear matter
- Properties of nuclear matter

## Applications

- Impact of nuclear science in other fields and society

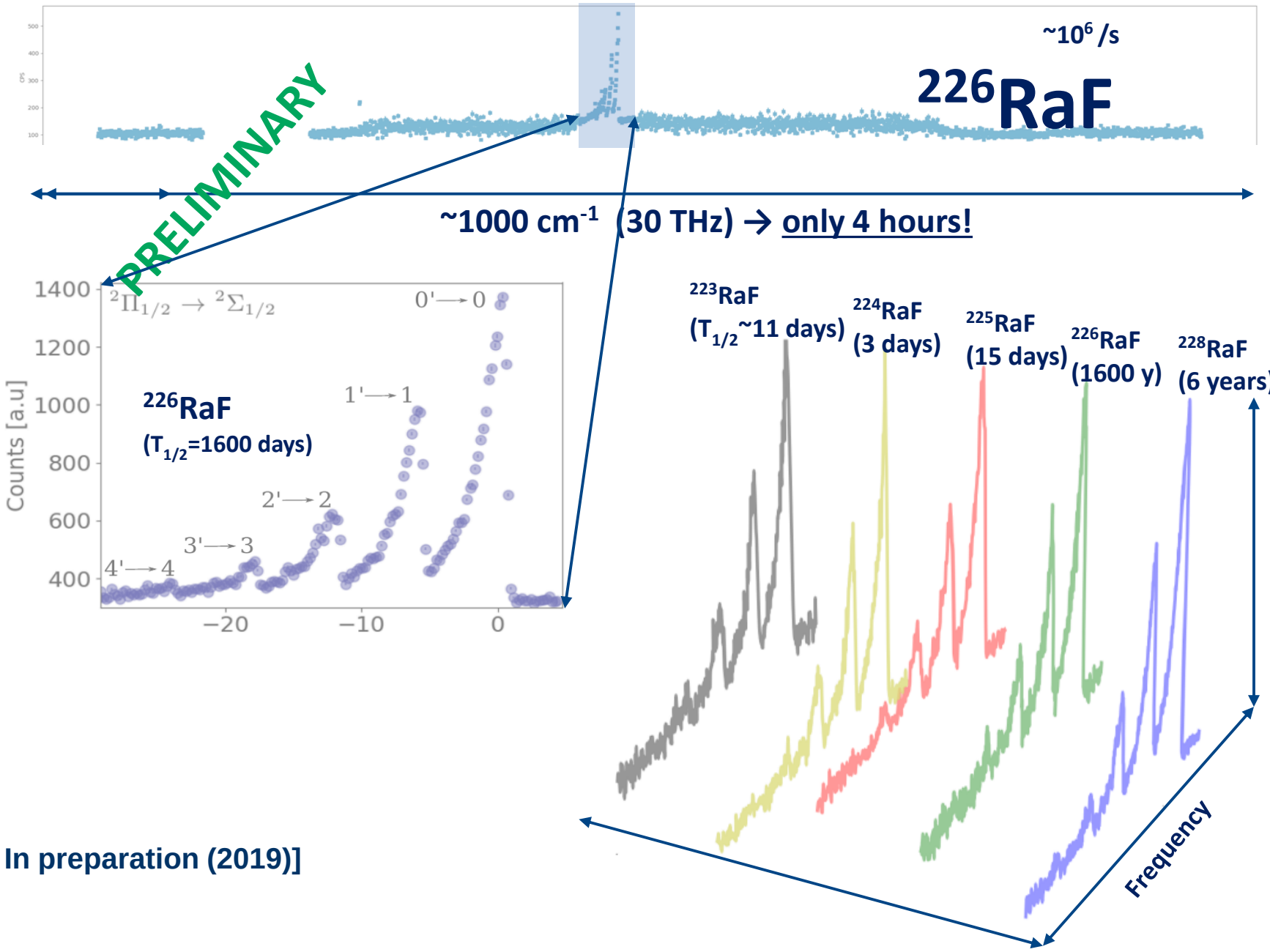



Recent work on relevant molecules for BSM physics (RaF) from Dec 18 studied by CRIS at ISOLDE

**Radioactive atoms and molecules provide unique answers to these questions!**

# RaF: Results (November 2018)

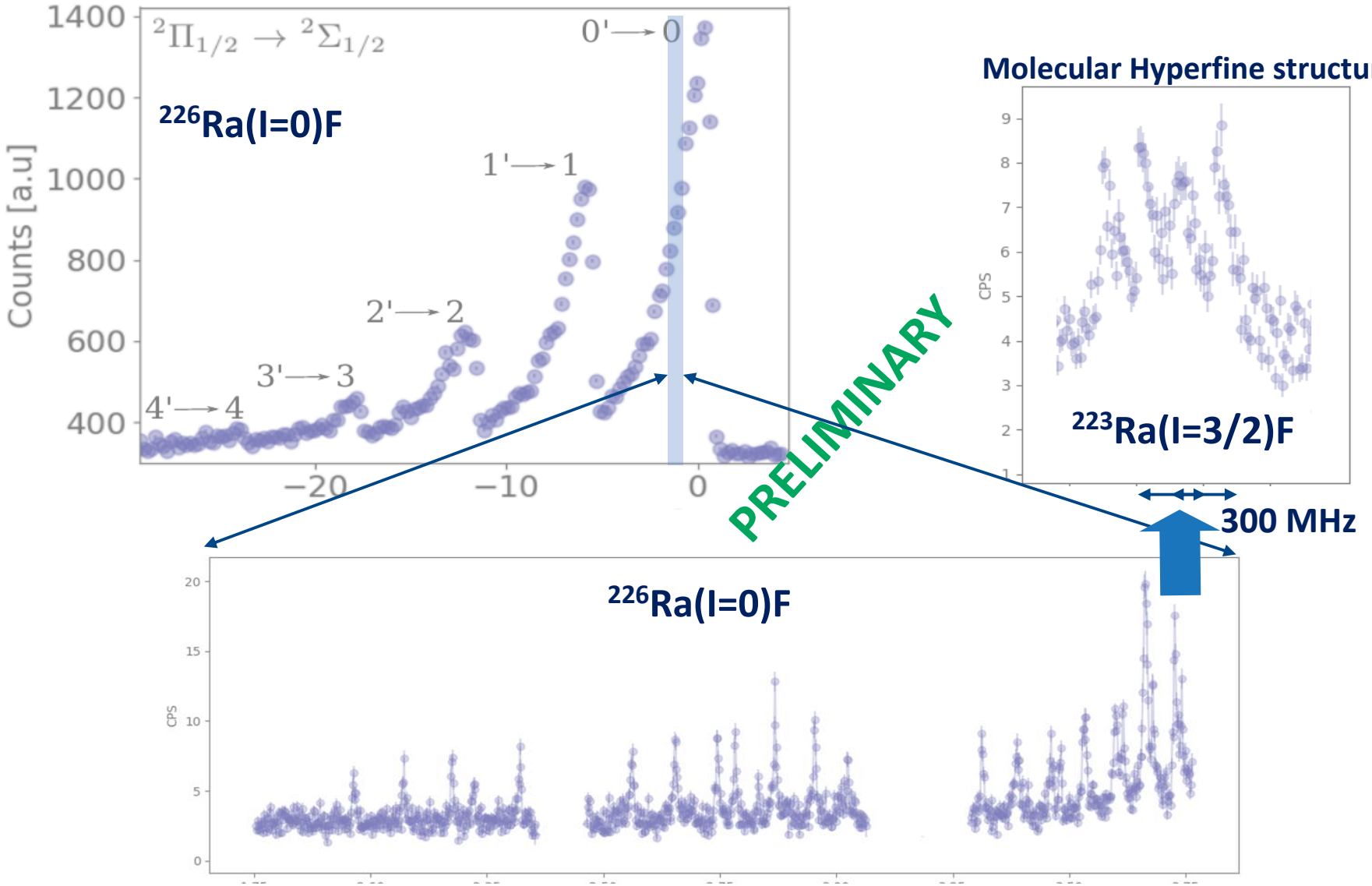





[Garcia Ruiz et al. In preparation (2019)]

# RaF: Results (November 2018)






[Garcia Ruiz et al. In preparation (2019)]

From THz to MHz

# Radioactive Molecules: RaF Results



→ Low-lying structure of RaF?

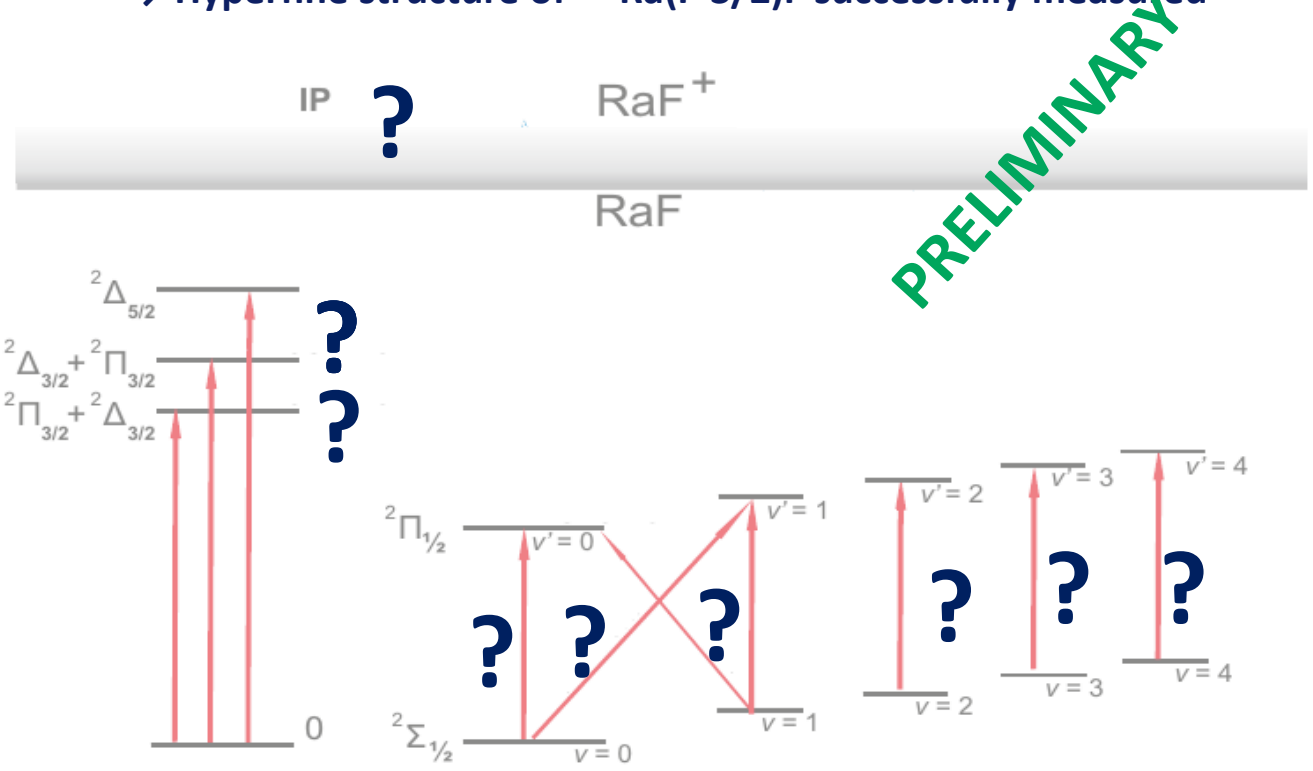
… and many-more properties successfully measured!

→ For the first time: Low-lying structure, Ionization potential, ...

→ A suitable laser cooling scheme has been established!

→ Measurements extend to $^{223}$RaF, $^{224}$RaF, $^{225}$RaF, $^{226}$RaF, $^{228}$RaF

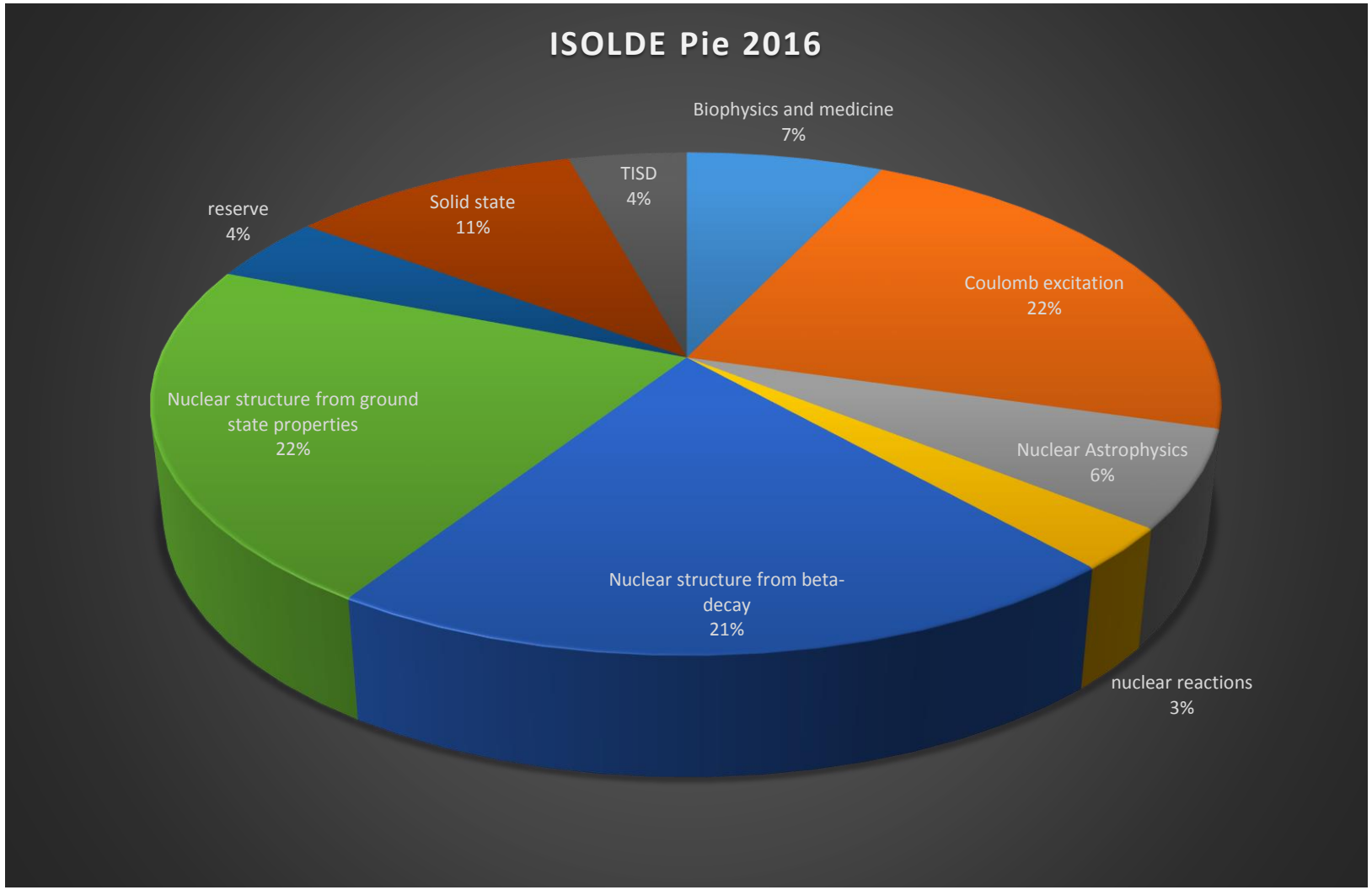
→ Hyperfine structure of $^{223}$Ra(I=3/2)F successfully measured




[Garcia Ruiz et al. In preparation (2019)]

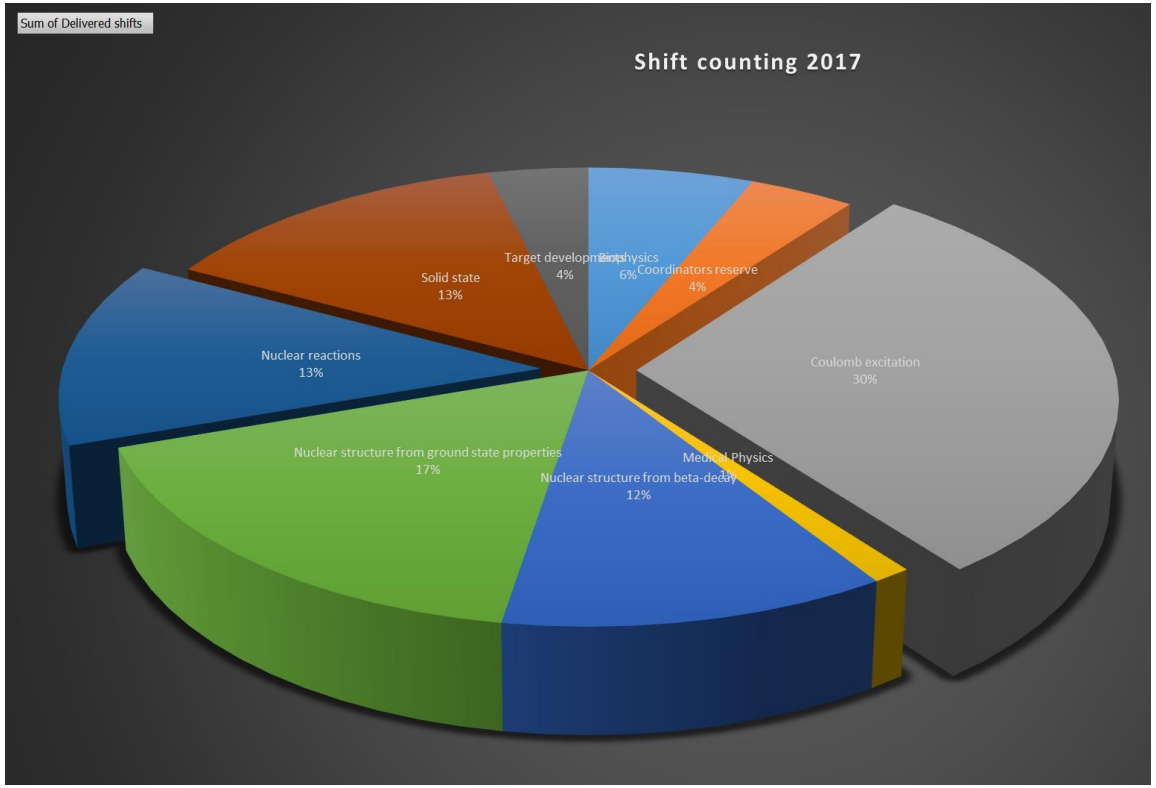
| Étiquettes de lignes | Nombre de Shifts delivered 2016 |
|---|---|
| BIO | 2 |
| COLLAPS | 3 |
| Collections | 1 |
| CRIS | 2 |
| fast-timing | 1 |
| HIE | 6 |
| IDS | 5 |
| ISOLTRAP | 3 |
| LA1; TATRA | 1 |
| MEDICAL | 1 |
| SSP | 17 |
| TAS | 1 |
| VITO | 1 |
| Windmill; ISOLTRAP | 1 |
| (vide) | 1 |
| Total général | 46 |

In total 358.5 shifts in 2016



# 2017: 427 shifts in total

| Row Labels | Count of Experiment |
|---|---|
| Biophysics | 3 |
| COLLAPS | 3 |
| CRIS | 3 |
| HIE | 11 |
| IDS | 2 |
| ISOLTRAP | 3 |
| Medical | 1 |
| SSP | 14 |
| TISD | 1 |
| VITO | 2 |
| Windmill | 1 |
| Coord reserve | 1 |
| HIE | 1 |
| **Grand Total** | **46** |

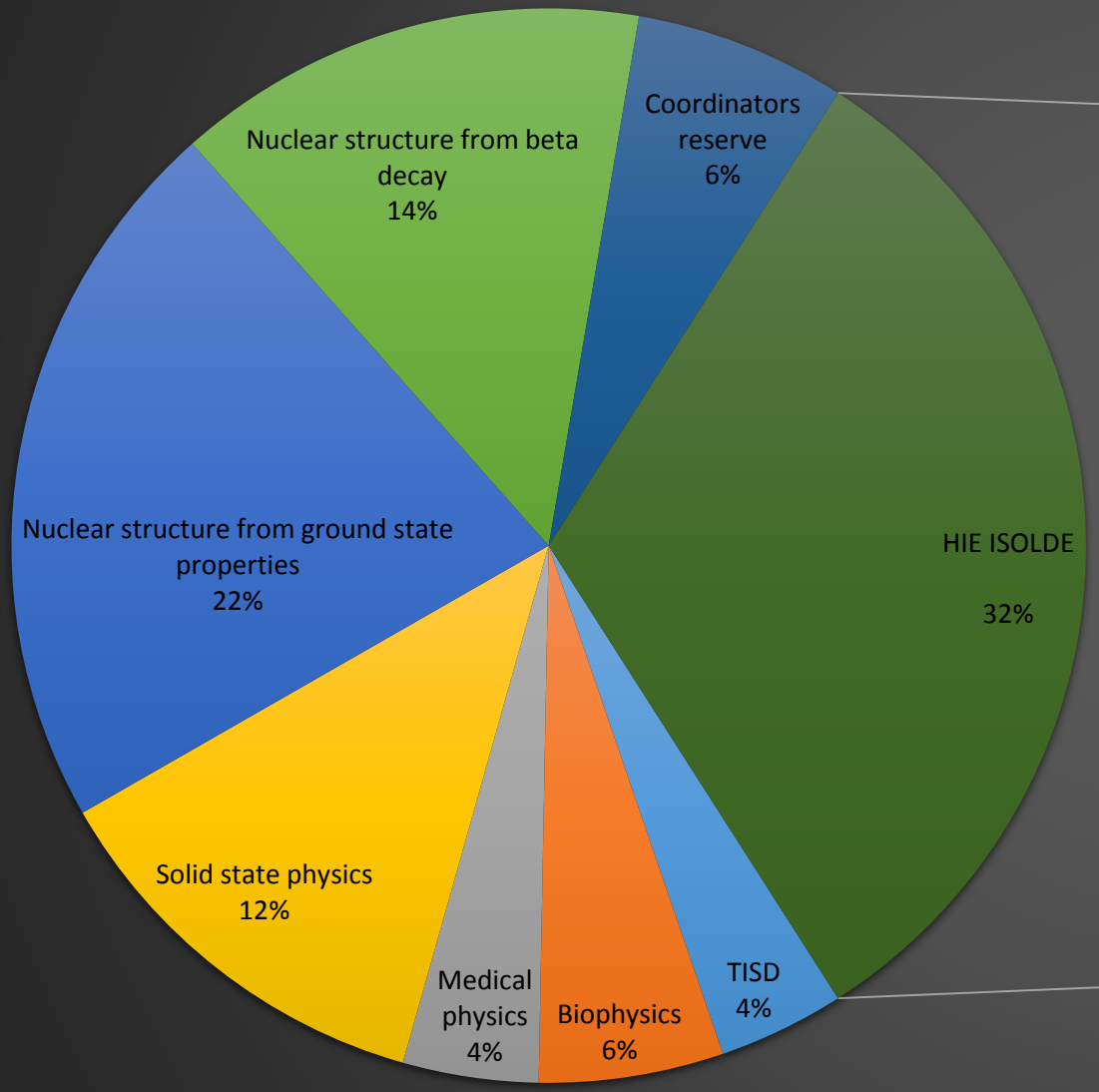


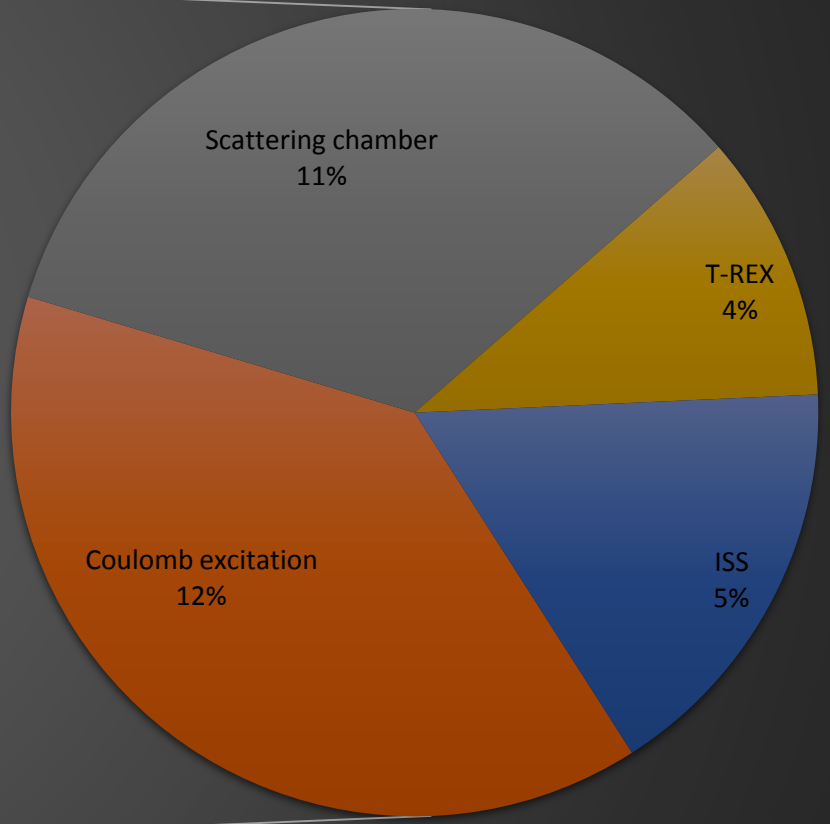
| Étiquettes de lignes | Nombre de Delivered 2018 |
|---|---|
| Biophysics | 4 |
| COLLAPS | 3 |
| COLLAPS; VITO | |
| Collections :7Be | |
| Collections: 163Ho | |
| CRIS | 4 |
| Gandalph | 1 |
| HIE | 12 |
| IDS | 5 |
| ISOLTRAP | 2 |
| la1 | 1 |
| MEDICAL | 2 |
| Medicine | |
| Miniball | |
| NICOLE | |
| REX | 1 |
| Special | 1 |
| SSP | 13 |
| TAS | |
| TISD | |
| VITO | |
| Windmill/IDS | |
| Windmill; ISOLTRAP | 1 |
| WITCH | 1 |
| (vide) | |
| Total général | 51 |

| Delivered | 2018 | 2017 | 2016 | 2015 | 2014 | 2012 | 2011 |
|---|---|---|---|---|---|---|---|
| Protons | TBC | 8.00E+19 | 7.80E+19 | 9.40E+19 | 5.50E+19 | 1.15E+20 | 8.05E+19 |
| Shifts for IS exp | 463 | 394 | 343 | 263 | 208.5 | 416 | 313.5 |
| Shifts for LOIs | 11 | 5 | 10 | 4 | 6.5 | 15.5 | 16 |
| HIE/REX shifts (IS +LOI) | 162.5 | 182 | 95 | Special | - | 221.5 | 190.5 |
| Average IS shifts/day | 1.94 | 1.76 | 1.65 | 1.4 | 1.55 | 1.61 | 1.55 |

532 shifts (including TISD, reserve etc) in 2018

# ISOLDE PIE 2018



| Étiquettes de lignes | Sum of Shifts remaining (Feb 2018) | Sum of Delivered 2018 | Count of Delivered 2018 | Count of Exp. no. | Sum of Shifts remaining 2018 | Sum of Shifts remaining Jan 2019 |
|---|---|---|---|---|---|---|
| Biophysics | 79,5 | 31 | 4 | 6 | 48,5 | 48,5 |
| COLLAPS | 69 | 35,5 | 3 | 6 | 33,5 | 33,5 |
| COLLAPS; VITO | 13 | | | 1 | 13 | 13 |
| Collections :7Be | 24 | | | 1 | 24 | 24 |
| Collections: 163Ho | 6 | | | 1 | 6 | 6 |
| CRIS | 85,5 | 57 | 4 | 8 | 28,5 | 28,5 |
| Gandalph | 17 | 9 | 1 | 2 | 8 | 8 |
| HIE | 746,5 | 152,5 | 12 | 48 | 594 | 585 |
| IDS | 92 | 36 | 5 | 12 | 56 | 56 |
| ISOLTRAP | 51 | 17 | 2 | 8 | 34 | 34 |
| la1 | 37 | 10 | 1 | 6 | 27 | 27 |
| MEDICAL | 25 | 20,5 | 2 | 2 | 4,5 | 0 |
| Medicine | 4 | | | 3 | 4 | 4 |
| Miniball | 2 | | | 1 | 2 | 2 |
| NICOLE | 29 | | | 2 | 29 | 29 |
| Special | 3 | 3 | 1 | 1 | 0 | 0 |
| SSP | 138,5 | 66,5 | 13 | 27 | 72 | 72 |
| TAS | 11,5 | | | 3 | 0 | 0 |
| TISD | 14 | | | 3 | 14 | 14 |
| VITO | 0 | | | 1 | 0 | 0 |
| Windmill/IDS | 22,5 | | | 1 | 22,5 | 22,5 |
| Windmill; ISOLTRAP | 3 | 3 | 1 | 1 | 0 | 0 |
| WITCH | 15 | 5 | 1 | 1 | 10 | 10 |
| (vide) | 0 | | | 2 | 0 | 0 |
| REX | 47 | 8 | 1 | 6 | 39 | 6 |
| Total général | 1535 | 454 | 51 | 153 | 1069,5 | 1023 |

INTC meetings in 2019

No meeting in February: Call for status reports for all who wish to retain shifts after LS2.

Last Friday was deadline 776.5 shifts requested to be retained (some may be released after collaboration meetings in 2019…)

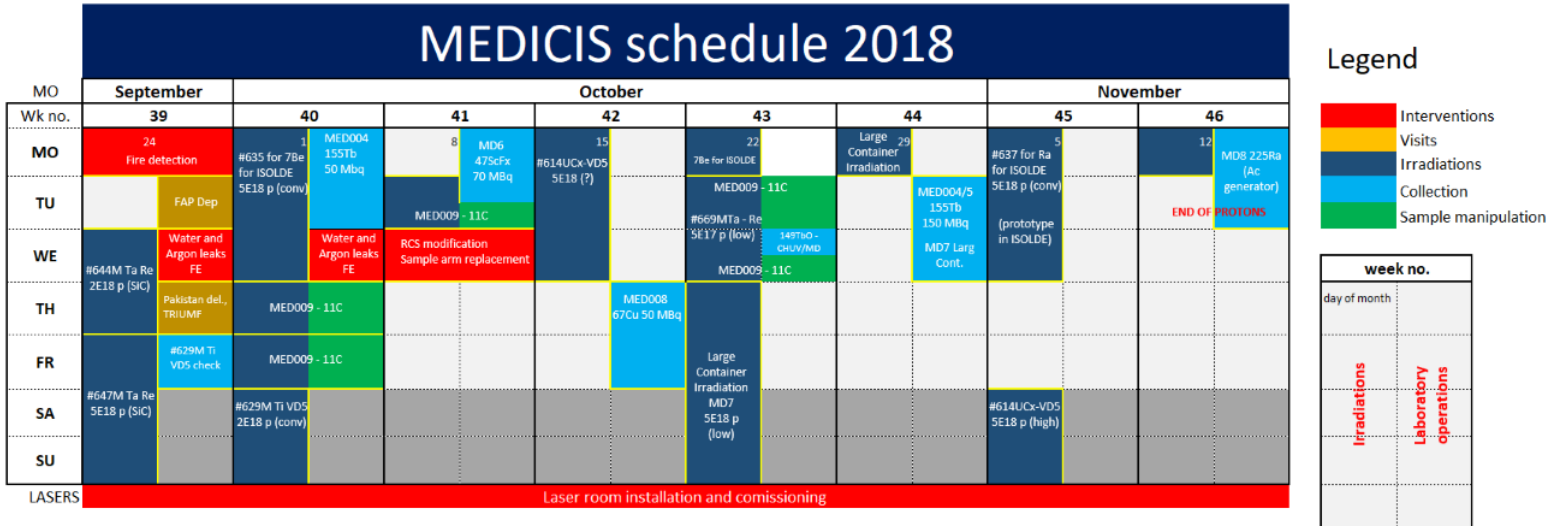
Meetings in July and November to assess the status reports. Including detailed TAC meetings throughout the year

Effective backlog now ~776.5 shifts.

New proposals may be accepted in early 2020.

| Étiquettes de lignes | Sum of Shifts remaining Jan 2019 |
|---|---|
| Biophysics | 48,5 |
| COLLAPS | 23 |
| Collections :7Be | 24 |
| Collections: 163Ho | 6 |
| CRIS | 23,5 |
| Gandalph | 8 |
| HIE | 461 |
| IDS | 33 |
| ISOLTRAP | 22 |
| la1 | 20 |
| Miniball | 2 |
| NICOLE | 29 |
| SSP | 43 |
| TISD | 11 |
| Windmill/IDS | 22,5 |
| Total général | 776,5 |

# Interaction with MEDICIS




Legend

- Interventions
- Visits
- Irradiations
- Collection
- Sample manipulation

| week no. | |
|---|---|
| day of month | |
| Irradiations | Laboratory operations |

Interaction with MEDICIS has been constructive.

No serious impact on ISOLDE physics programme and the irradiation possibilities for winter physics was a great boost for ISOLDE as a whole.

Possibility of non-medical isotope collections after LS2 can also be beneficial to the facility as a whole.

ISOLDE

Week 43 2018

| | | | RILIS | GPS | HRS | CA0 | Protons | MEDICIS | Visits | other |
|---|---|---|---|---|---|---|---|---|---|---|
| Monday | 10/22/2018 | AM | At | Switch back to positive | | GPS | NORMGPS | #635 for Be | No visits scheduled this week. | no protons while switch to positive takes place |
| | | PM | | from ~ 0900 until mid-afternoon | Once GPS positive: IS645 takes beam (proton scan needed?) | HRS | NORMHRS | | | |
| | | night | | | IS645 | HRS | NORMHRS | | | |
| Tuesday | 10/23/2018 | AM | | | | HRS | NORMHRS | 1030: short irradiation for Simon Stegmann. Followed by #669M irradiation | | |
| | | PM | | | IS645 | HRS | NORMHRS | | | |
| | | night | | | IS645 | HRS | NORMHRS | | | |
| Wednesday | 10/24/2018 | AM | | #534 Sn VD5 | IS645 | HRS | NORMHRS | | | |
| | | PM | | Stable setup to GLM | IS645 | HRS | NORMHRS | | | |
| | | night | | | IS645 | HRS | NORMHRS | | | |
| Thursday | 10/25/2018 | AM | RILIS: TI | Stable setup continues. 1-2 pulses STAGISO | IS645 | HRS | NORMHRS/ STAGISO_GPS | | | |
| | | PM | | 111Cd to GLM | IS641 final stable tune | HRS | NORMHRS/ STAGISO_GPS | | | |
| | | night | | 111Cd to GLM | IS641 | HRS | NORMHRS/ STAGISO_GPS | | | |
| Friday | 10/26/2018 | AM | | 111Cd to GLM | IS641 | HRS | NORMHRS/ STAGISO_GPS | | | |
| | | PM | | 111Cd to GLM | IS641 | HRS | NORMHRS/ STAGISO_GPS | | | |
| | | night | | 111Cd to GLM | IS641 | HRS | NORMHRS/ STAGISO_GPS | | | |
| Saturday | 10/27/2018 | AM | | 111Cd to GLM | IS641 | HRS | NORMHRS/ STAGISO_GPS | | | |
| | | PM | | 111Cd to GLM | IS641 | HRS | STAGISO_GPS | | | |
| | | night | | 111Cd to GLM | (IS641 ends Sat PM for cooling) | HRS | STAGISO_GPS | | | |
| Sunday | 10/28/2018 | AM | | 111Cd to GLM | | HRS | STAGISO_GPS | | | |
| | | PM | | 111Cd to GLM | | HRS | | | | |
| | | night | | 111Cd to GLM | | HRS | STAGISO_GPS | | | |
| Monday | 10/29/2018 | AM | | till 0800: 111Cd to GLM | | HRS | STAGISO_GPS | | | |
| | | PM | | (tbc) Ta W or UC W | #642 UC - n(ew) | HRS | | | | |
| | | night | | | | HRS | | | | |

Summary of week: GANDALPH experiment ends on Monday. Switch back to Positive on Monday morning. Once this is complete, HRS will take over. IS645 26Na to Vito. Proton scan may be required, else nominal settings from previous target run in week 27 can be used. IS645 runs till Thursday afternoon. IDS then takes beam till Saturday ~ 1400 (to allow for radiactive cooling for target change on Monday 29th).

(GPS): At run ends on Monday morning at 0900. Switch back to positive Monday morning. #534 Sn (VD5) for 111Cd beams to GLM. Setup to GLM only HT = 30kV. Follow settings for target from 2017: 14 Aug 2017 and 9 October 2017 and week 17 2018. Slow release of isotope, no proton scan. Usually requires a few hours to stabilise. 1-2 STAGISO pulses @ 8e12 ppp. 16us spacing. Stable: 132Xe.

(HRS): #658 used Ucx - Ta for Na and Tl isotopes Setup at 50kV in bunching and transmission mode. VITO taking 26Na in bunching mode. IDS taking 182, 184, 186Tl in transmission mode. Lasers in narrowband for Tl run. Ends 1400 Saturday.

RFQ in bunching and transmission mode.

Protons: NORMGPS until Monday morning. NORMHRS + 1-2 pulses STAGISO to GPS until Saturday afternoon. Thereafter more STAGISO pulses can be allocated to GPS.

Operations responsible: Miguel (169616) until 23rd October. Emanuele (167813) afterwards.

For more details about visits: https://espace.cern.ch/isolde-visits-info/Lists/Calendar/calendar.aspx

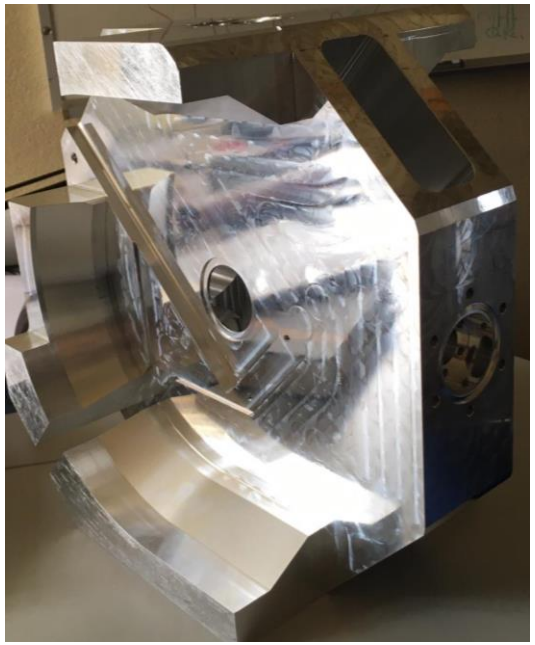
# EP technicians

Antonio Goncalves and Francois Garnier: supported by the collaboration.

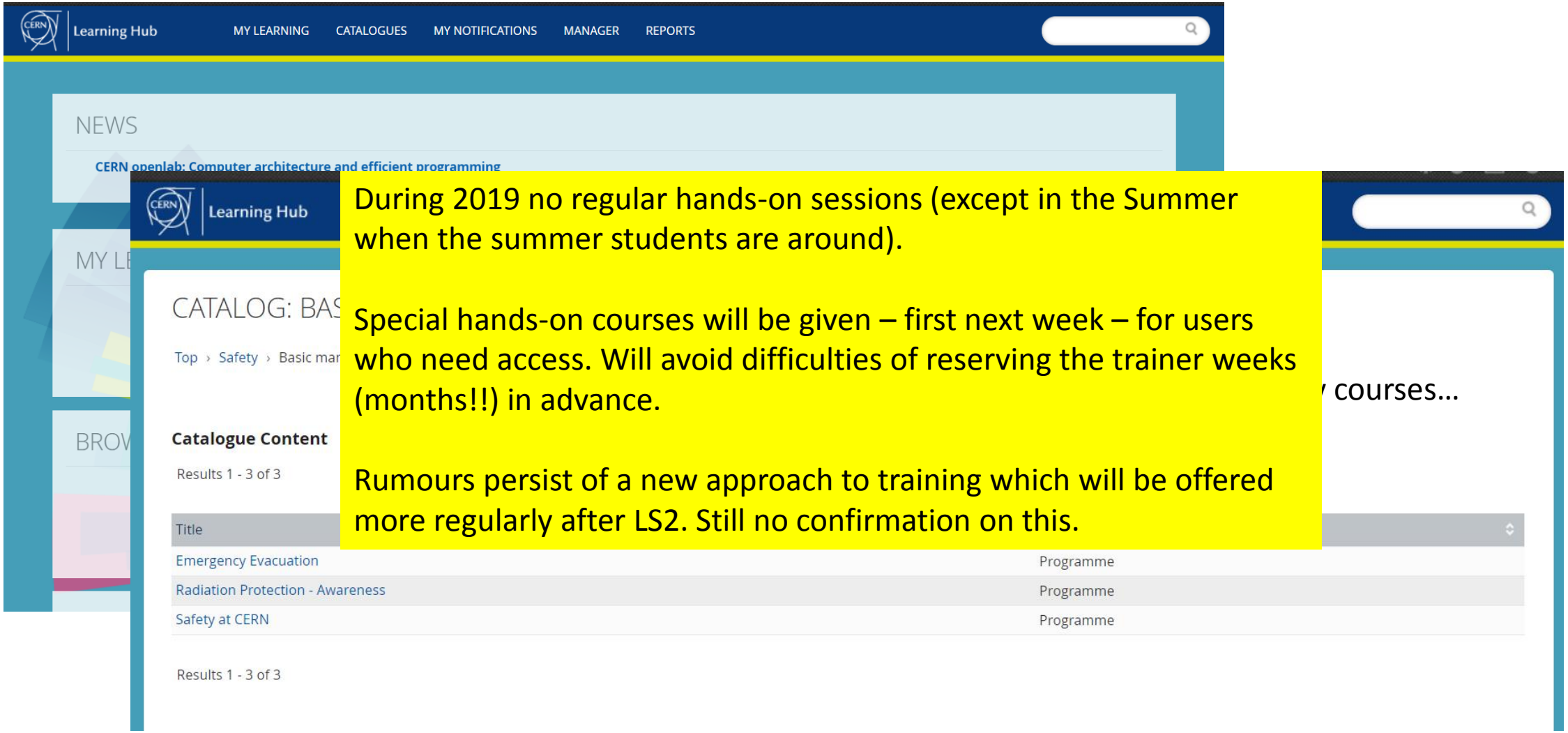
Available for jobs for users to assist experiment: especially mechanical work.

Work carried out for MIRACLS, IDS, HIE-ISOLDE, VITO, biophysics and others.

2019: less direct work for the technicians to carry out for physics: re-direct to ensuring the conformity of the 508 workshop, training of users, help with REX EBIS upgrade and safety matters in the hall.



# Initial feedback from new learning “hub” (safety training for most users)




During 2019 no regular hands-on sessions (except in the Summer when the summer students are around).

Special hands-on courses will be given – first next week – for users who need access. Will avoid difficulties of reserving the trainer weeks (months!!) in advance.

Rumours persist of a new approach to training which will be offered more regularly after LS2. Still no confirmation on this.