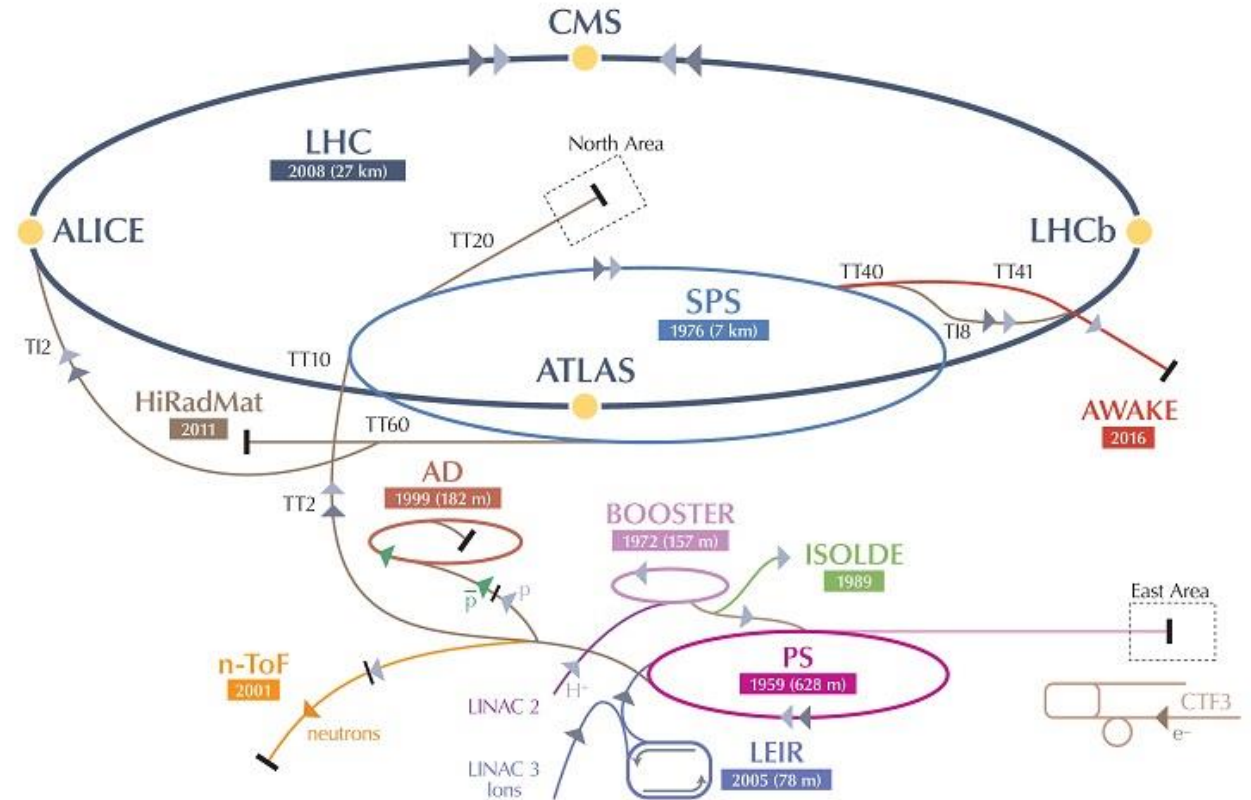


ISOLDE Yield Database Development

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Summer Student
University of Michigan

Isotope Separator On-Line DEmvice

- Beam starts at LINAC II
- PSB: Proton Synchrotron Booster → Proton beam 1.4GeV
- Radioactive Ion Beams (RIBs)
- Applications: Nuclear, atomic, surface, and solid state physics, nuclear medicine, and astrophysics



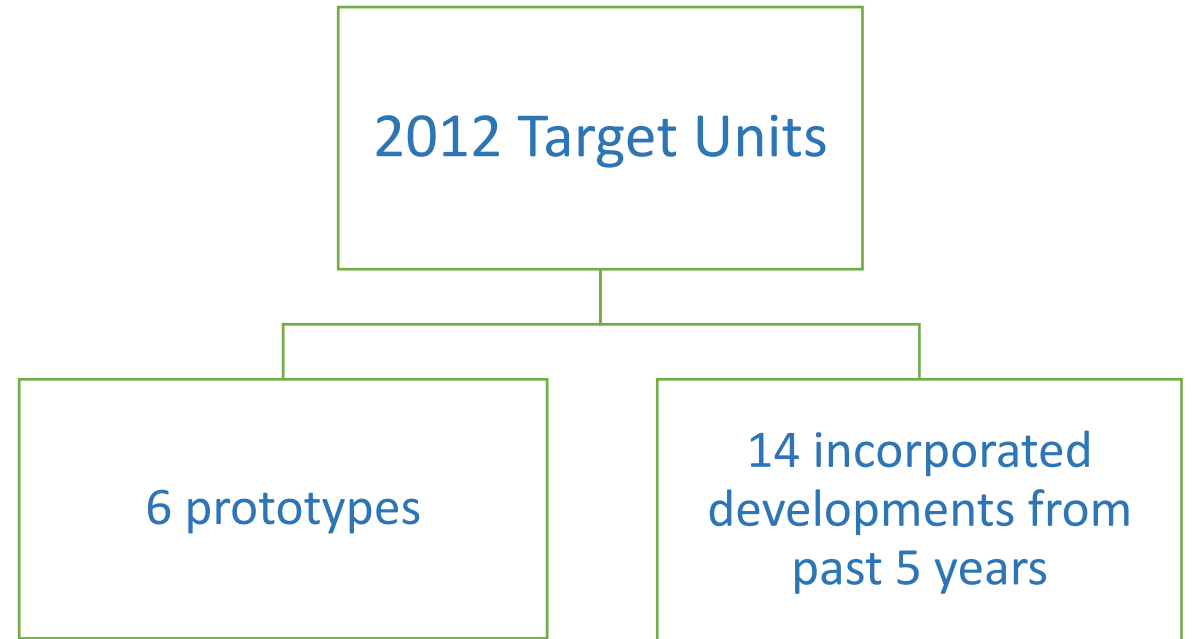
Project Motivation

Experimental Planning and User Proposals:

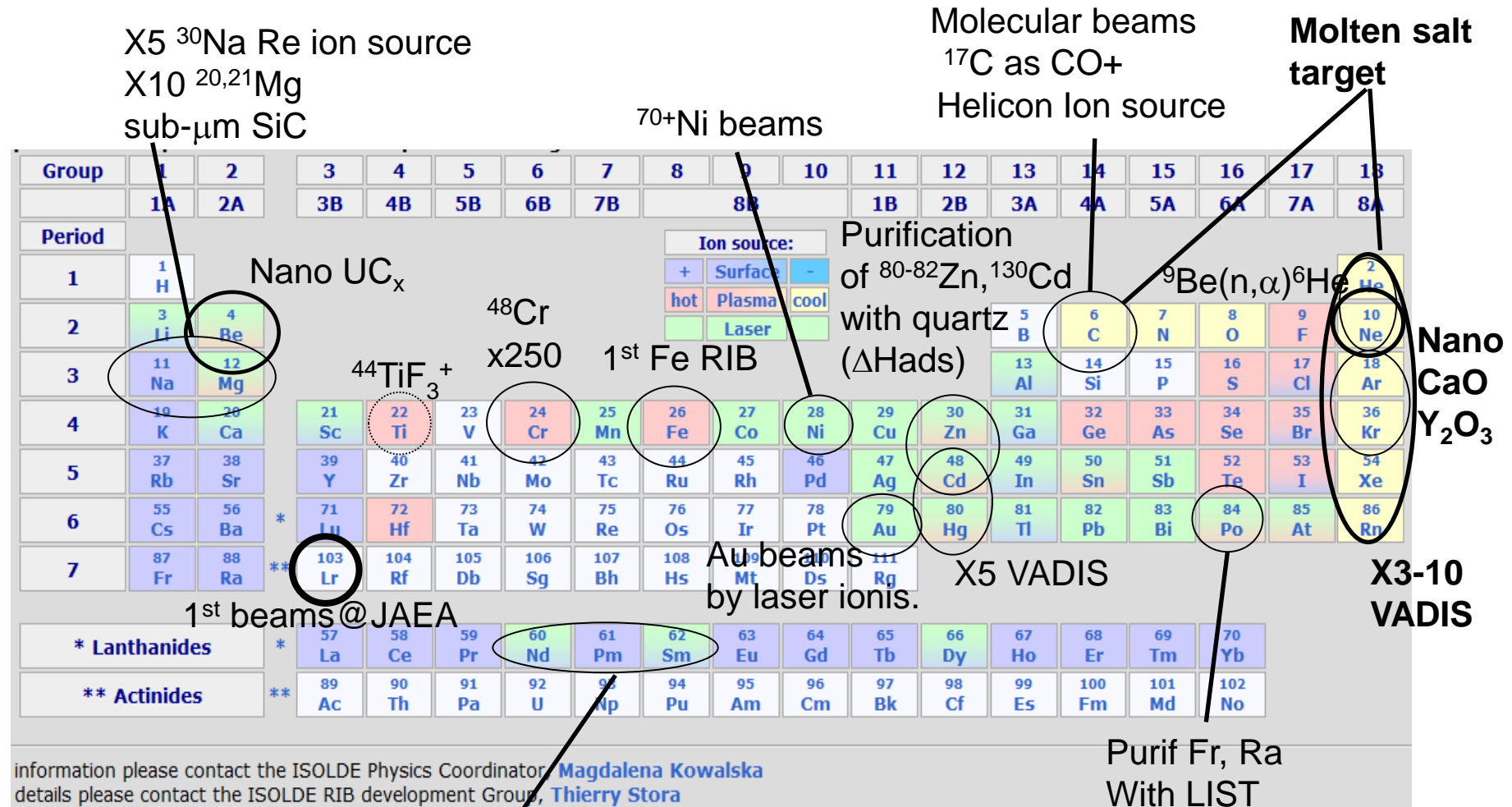
- Web page reference
- Experiment feasibility

Open Access source:

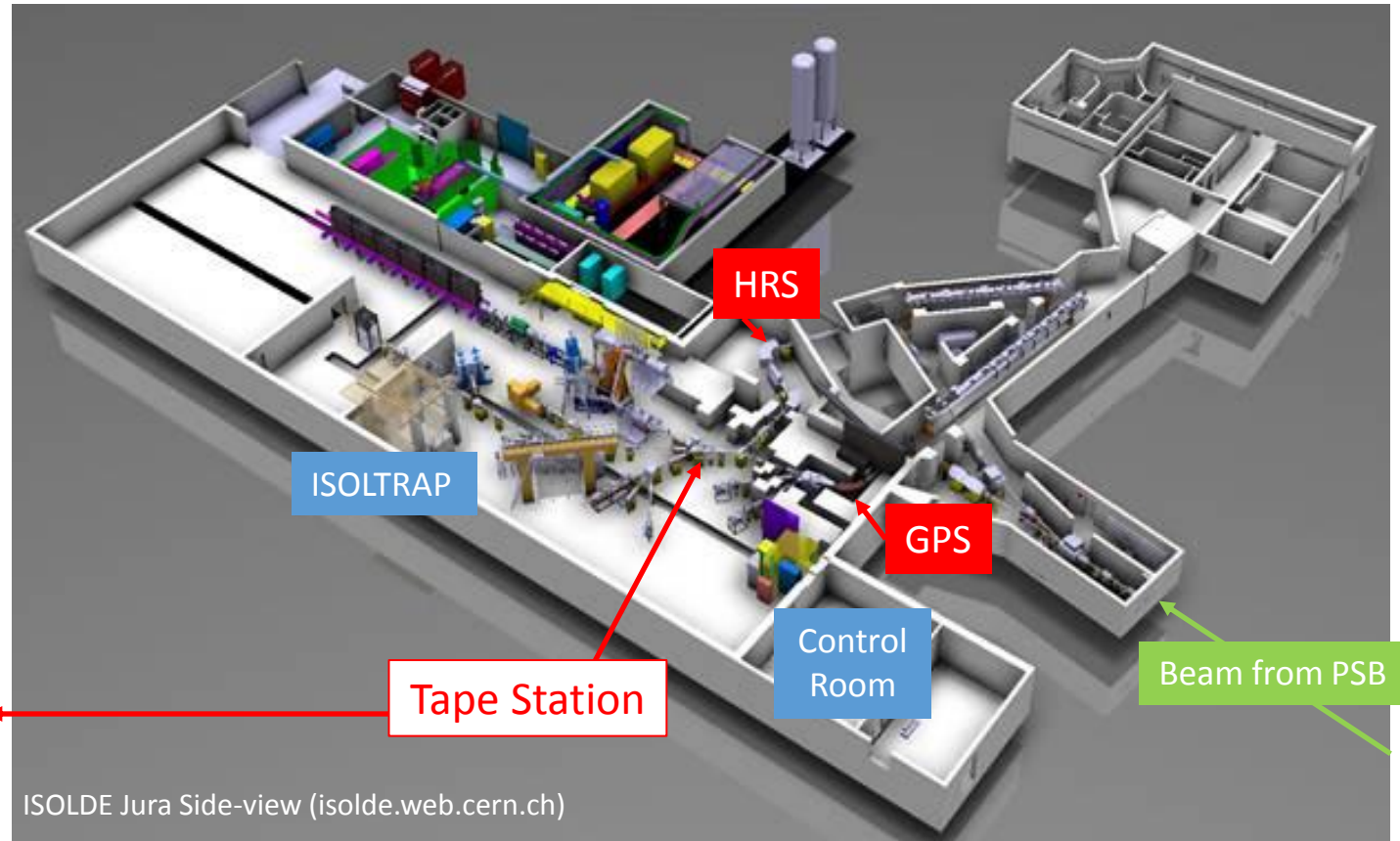
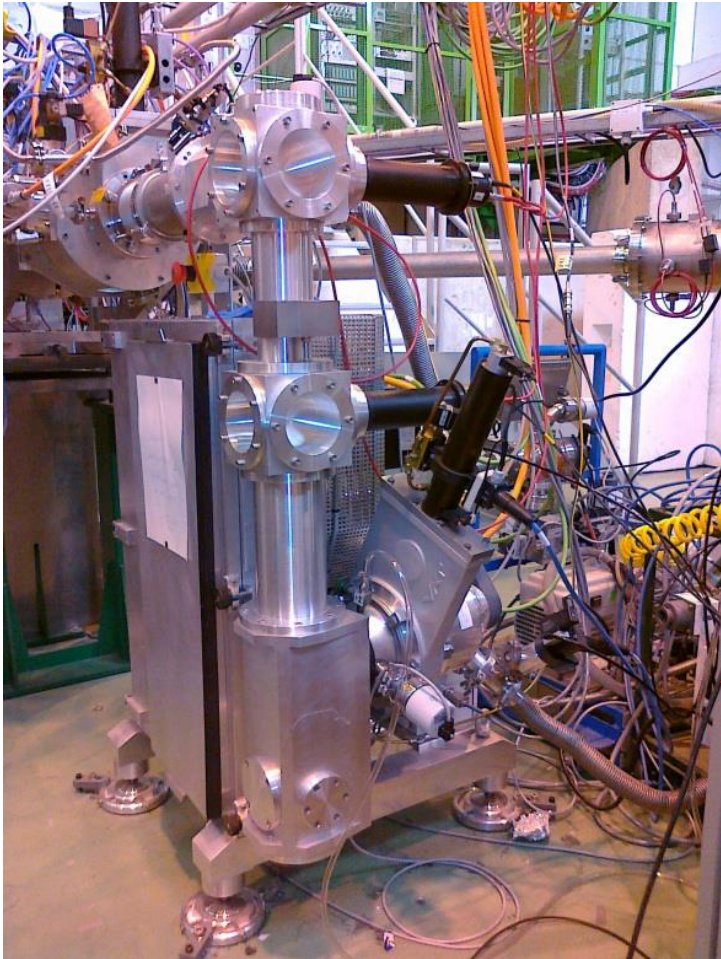
- Target/ion source data
- Beam purity
- Publication references



Beam developments in the past 5 years



Yield Measurements



Current Database Statistics

Group → 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
↓ Period

1 1 H 2 He

2 3 Li 4 Be 5 B 6 C 7 N 8 O 9 F 10 Ne

3 11 Na 12 Mg 13 Al 14 Si 15 P 16 S 17 Cl 18 Ar

4 19 K 20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni 29 Cu 30 Zn 31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr

5 37 Rb 38 Sr 39 Y 40 Zr 41 Nb 42 Mo 43 Tc 44 Ru 45 Rh 46 Pd 47 Ag 48 Cd 49 In 50 Sn 51 Sb 52 Te 53 I 54 Xe

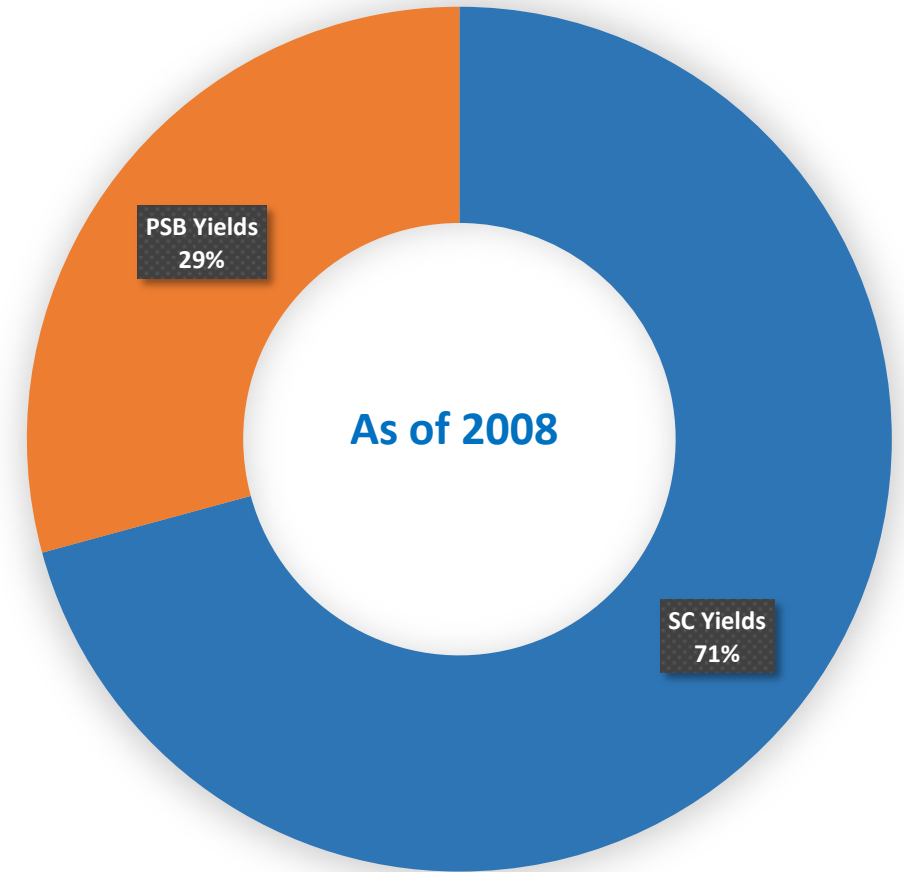
6 55 Cs 56 Ba 72 Hf 73 Ta 74 W 75 Re 76 Os 77 Ir 78 Pt 79 Au 80 Hg 81 Tl 82 Pb 83 Bi 84 Po 85 At 86 Rn

7 87 Fr 88 Ra 104 Rf 105 Db 106 Sg 107 Bh 108 Hs 109 Mt 110 Ds 111 Rg 112 Cn 113 Uut 114 Uuq 115 Uup 116 Uuh 117 Uus 118 Uuo

Lanthanides 57 La 58 Ce 59 Pr 60 Nd 61 Pm 62 Sm 63 Eu 64 Gd 65 Tb 66 Dy 67 Ho 68 Er 69 Tm 70 Yb 71 Lu

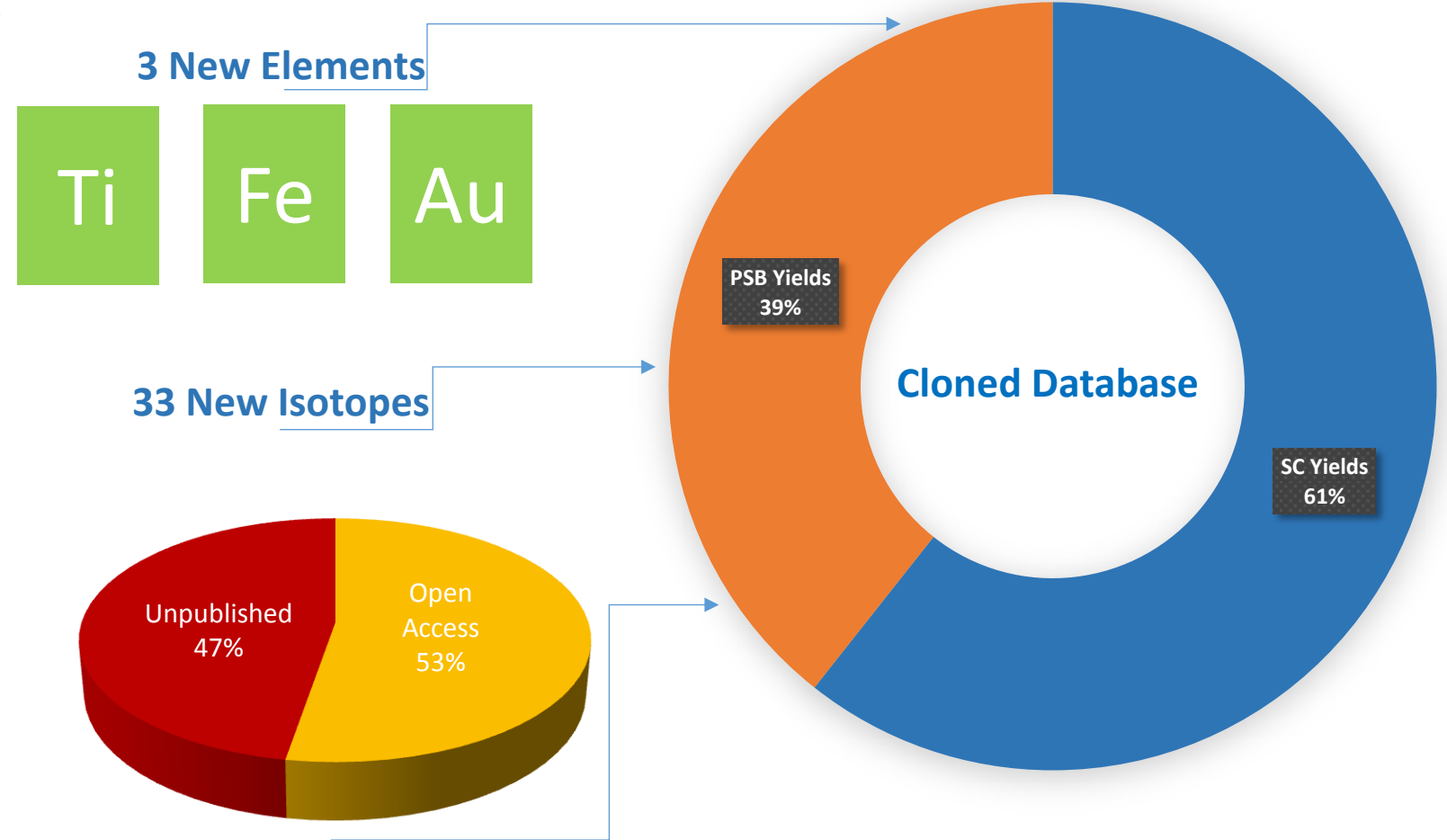
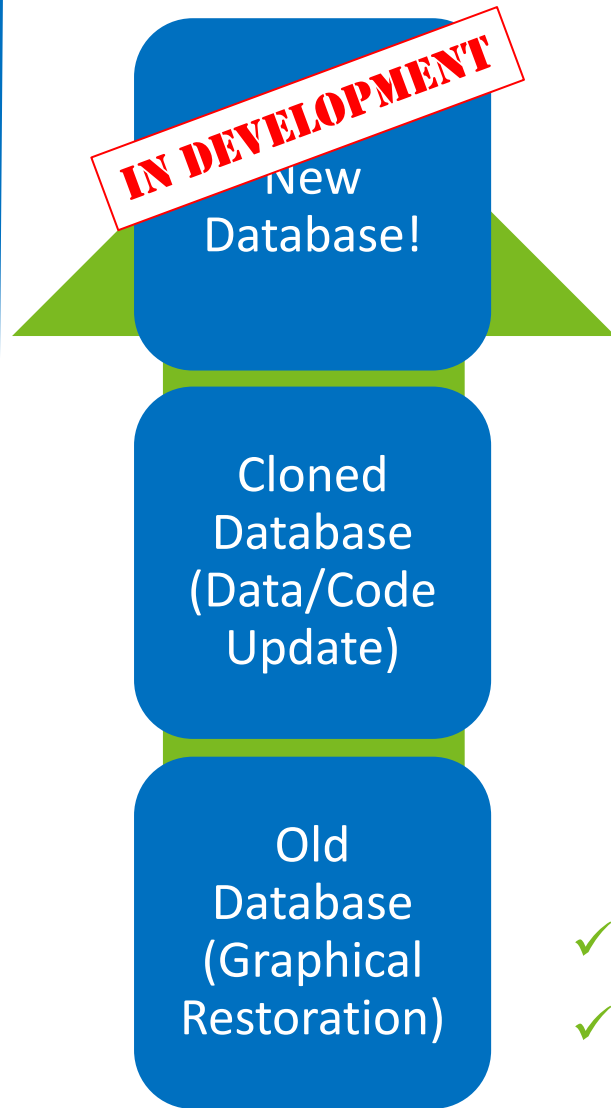
Actinides 89 Ac 90 Th 91 Pa 92 U 93 Np 94 Pu 95 Am 96 Cm 97 Bk 98 Cf 99 Es 100 Fm 101 Md 102 No 103 Lr

Total Yields Reported: 2330
Isotopes of 68 Elements



Missing 6 years of yield data!

New Database



- ✓ 2 Years of E-logs (~1,500 entries)
- ✓ 500+ Publications reviewed
- ✓ 184 Unpublished yield entries
- ✓ 205 Yield entries for Open Access

Restored Features

...Coming soon to a computer near you!

Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	1A	2A	3B	4B	5B	6B	7B	8B			1B	2B	3A	4A	5A	6A	7A	8A	
Period																			
1	1 H																	2 He	
2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne	
3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
6	55 Cs	56 Ba	*	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	**	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg							
* Lanthanides			*	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb		
** Actinides			**	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No		

Ion source:

+

Surface

~

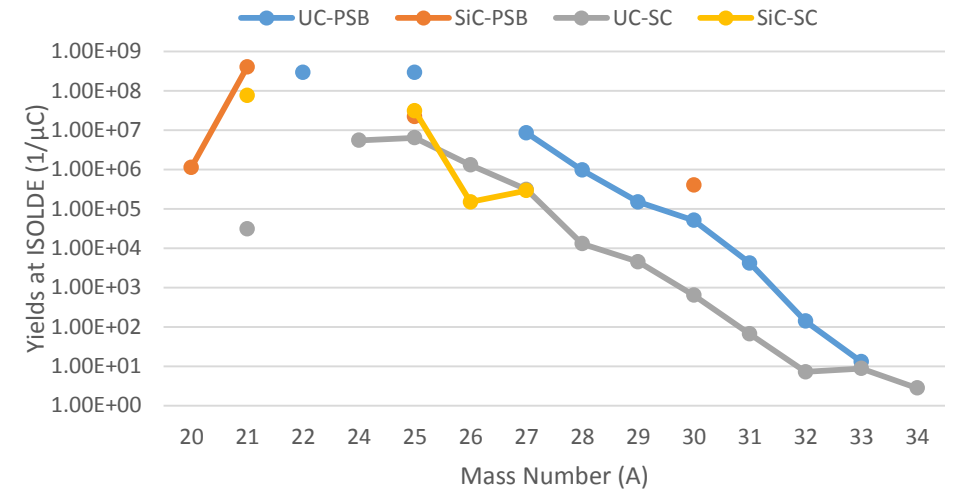
hotPlasmacool

Laser

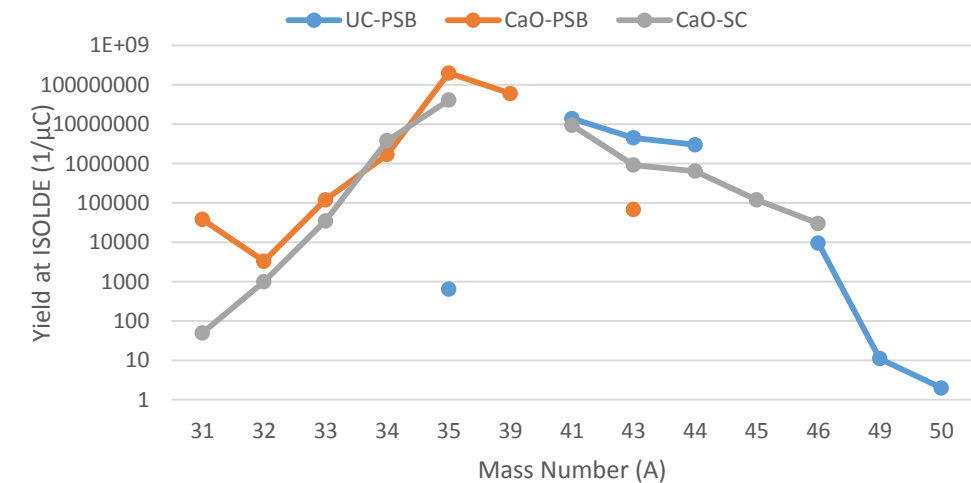
information please contact the ISOLDE Physics Coordinator, [Magdalena Kowalska](#)
 details please contact the ISOLDE RIB development Group, [Thierry Stora](#)

New Elements to Database!

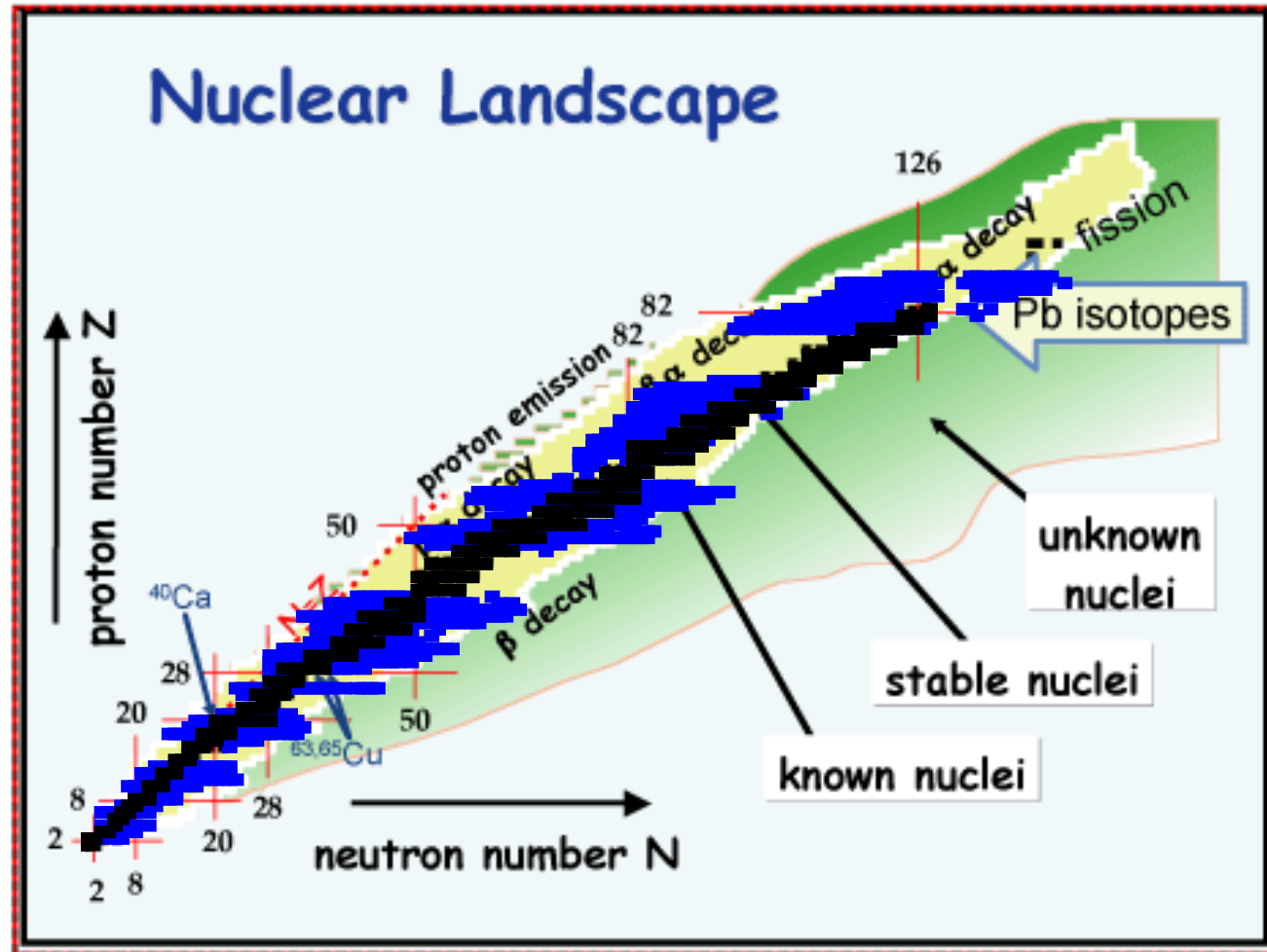
Sodium Yields by Mass Number



Argon Yields by Mass Number



New Features



- Nuclear Chart with special functions
- Search function: "Search by target"
- Extrapolation function for experimental planning

E-log Entertainment

I am too tired to figure out what is wrong. It could be that I am doing something stupid. Any other ideas?

Time to let go... Protons are off.

===== POWER CUT =====
===== ANOTHER NICE EVENING AT ISOLDE! =====
Trying to restart things...

We didn't manage to measure Xe146 :"(
We are going for Xe143, it will be more fun :)
We have 146Xe!!! Very nice resonance (100ms ex

I'd marry you but both of our girlfriends will kill me!

no new discoveries :(

I guess we'll just have to wait until it fails completely.

06:49 After that we tried a couple of shots
- Gooooood Morning Isoooooolde!!
IS453 is now waiting for laser restart
08:26 Since the yields have severely dropped
Thank you and have a nice day! / JG

06:19
06:19 Had my tea... Implantation is going fine.

Whatever, we are happy.
Good night.

01:10 WE HAVE LASER IONS!!!

Steady. Steady... Trip! Arrgh.

09:46 End of Miniball run. Proton request off.
10:43 higgs found /ATLAS /CMS

06:19 This morning I jumped out of my bed like a jaguar...well, not exactly, but what do you expect from a man at my age?
However, drink Italian coffee, not the CERN rubbish, and in short you will become as beautiful as I am! As for the beam:

Thank you, ISOLDE! Questions?

