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Beam Strategy Meeting

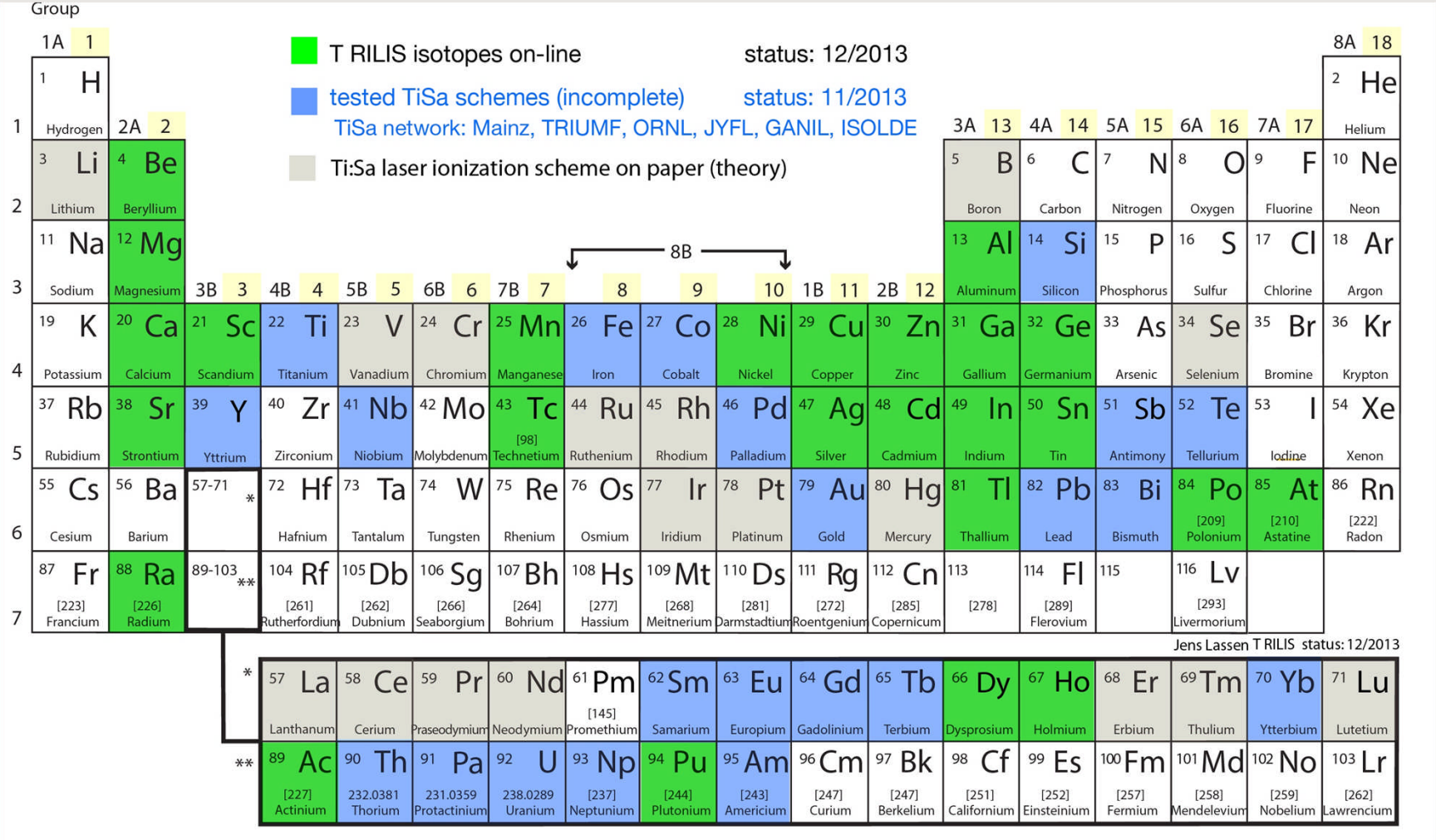
January 9, 2014, 3:00pm -4:30 pm

J. Dilling, J. Lassen, R. Laxdal, B. Moss, D. Jackson, M. Marchetto, J. Behr, Ch. Ruiz, A. Garnsworthy, R. Kruecken (chair)

Agenda:

- Recent developments
- Target schedule for 2014
- Beam Development perspectives
- AOB

Laser Ion Source Update



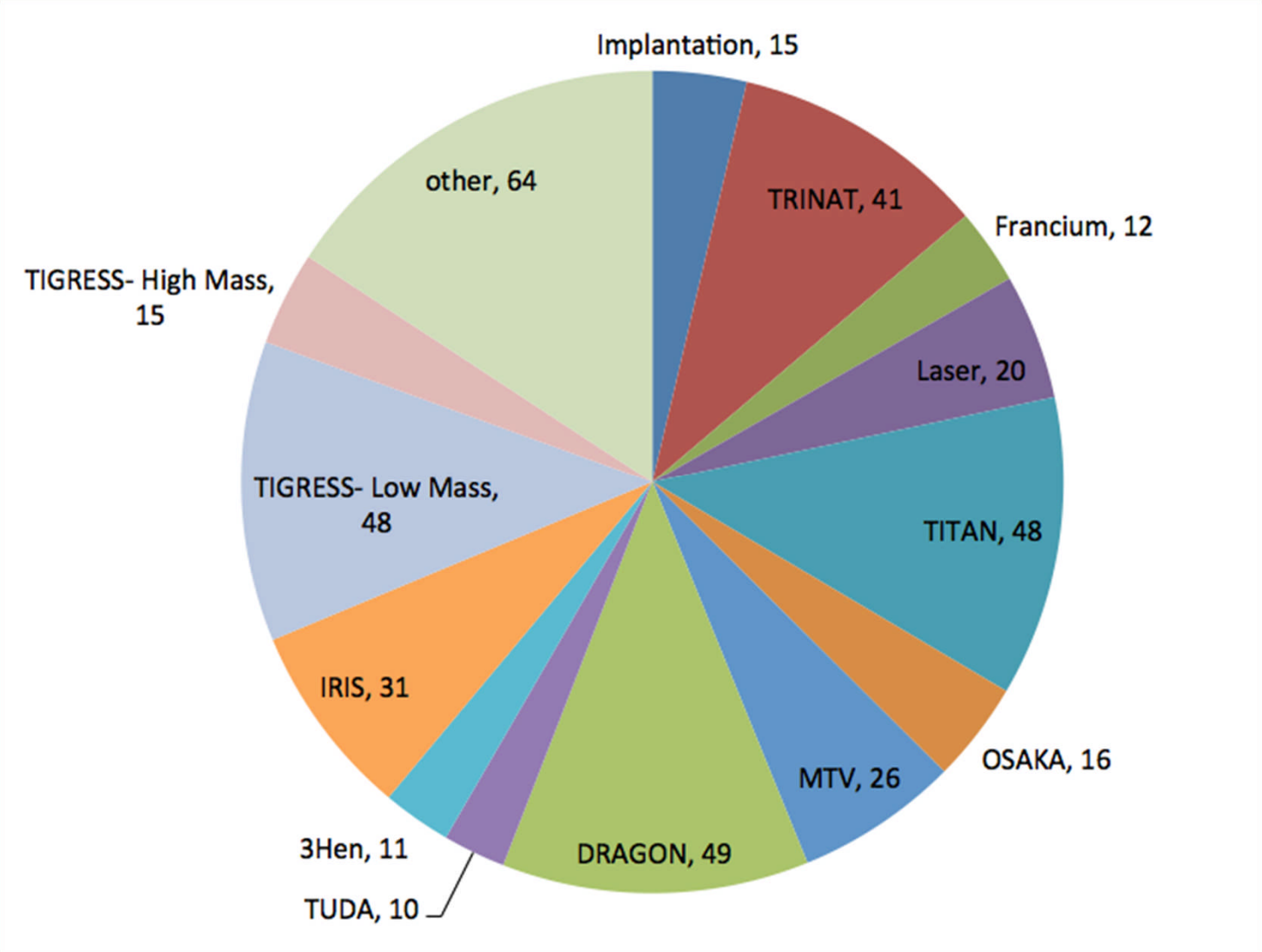
Recent developments

- Cd from IG-LIS,
  - factor 10 less than from UO/FEBIAD,
  - good background suppression
- At from IG-LIS
  - Good background suppression
  - Hyperfine structure A=198-219 (maybe 220 w/ 8pi)
  - Not sufficient yield for 221At 8pi/RnEDM experiment ➔ need Thorium target
- Lanthanides
  - Ho, Dy laser schemes established
  - Due to large background from surface ionization the source of choice is IG-LIS, proposed experiments can deal with loss of intensity

Thorium targets

- Need license amendment, discussion with safety group started, may discuss with CNSC in February during site visit
- Metallic Thorium better than Thorium-carbide due to high reactivity (larger than UC)
- Will discuss technical issues when Peter Kunz is back

ISAC Backlog by facility



SAP ISAC Backlog

Target	H	M	
Nb-SIS/RILIS	4	13	
NiO-FEBIAD		20	
SiC-FEBIAD	**45**		
SiC-SIS/IGLIS	7		
SiC-SIS/RILIS	**37**	4	
Ta-SIS/IGLIS	5		
Ta-SIS/RILIS	**85**	14	2 x
TiC-FEBIAD		8	
TiC-SIS	**61**		
U/Ta-SIS/RILIS			
UC-FEBIAD	14		
UC-SIS/IGLIS	7		
UC-SIS/RILIS	**78**		
ZrC-FEBIAD	12	13	
unclear	2		
Total shifts:	**422**	**86**	

← + betaNMR

← + betaNMR

~ 60 shifts per target

High-demand targets

		Isotopes		Comments / Questions
Ta	SIS/RILIS	^{8,9,11}Li,^{11}Be	IRIS, MTV, TIGRESS	HP (Li), LP (Be) betaNMR (28kV)
SiC	SIS/RILIS	^{26}Al (53kV), ^{28}Mg (57kV)	Impl./ DRAGON/TIGRESS	TM4 marginal for Al, Mg only possible with TM2 when repaired
TiC	SIS	^{37,38m}K (20kV)	DRAGON (CSB), TRINAT	
UC	SIS/RILIS	^{32,34}Mg,$^{30-34}$Al, K,Sr,Fr,Ac	TITAN, FrPNC, TIGRESS, Nucl.Med.	
SiC	FEBIAD	^{18}F, ^{18}Ne, ^{14,15}O	TUDA, DRAGON, TITAN	Challenging intensity requirements, need optimal performance
Nb	SIS/RILIS	^{74,76}Rb, ^{70}Sr, Y	TITAN,TIGRESS, Laser,	20-8 kV for laser, CSB

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Target modules

TM	HV	Sources	availability
1	24 kV max	SIS/LP	ready
2	~57 kV	FEBIAD/SIS/HP	Later than Sept.
3	~ 20 kV	FEBIAD/SIS/HP	Ready (broken steerer)
4	50 kV	SIS/IGLIS/HP	ready

Tgt/Src	Voltage need	TM	Availability for approved priority experiments
HP SiC/FEBIAD	53/57kV	2	2015 due to high demand on FEBIAD performance
HP SiC/SIS	53/57 kV	4 (53kV?)/ 2	TM4 risky, TM2 not in Schedule 126
HP Ta/SIS	20-30 kV	4 / 3	Ready for Schedule 126
LP Ta/SIS	20-30 kV	4 / 3/ 1	Ready for Schedule 126
LP TiC/SIS	20-30 kV	4 / 1	Ready for Schedule 126
LP UC/SIS	20-30 kV	4 / 1	Ready for Schedule 126
LP UC/FEBIAD	20-30kV	3	Ready for Schedule 126
HP Nb/SIS	20-30 kV	4 / 3	Ready for Schedule 126

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Possible Targets for 2014

#	TM	Target	Ion Source	Delivery goals	Development goals
1	TM3	Ta-HP	SIS/RILIS	^{11}Li,^{9}Li (IRIS), ^{8}Li (bNMR, MTV)	$^{101-106}$Sn, ^{7}Be
2	TM1	TiC-LP	SIS	^{38}K (TRINAT, DRAGON), ^{37m}K(TRINAT)	$^{35-37}$Ca
3	TM4	UC-LP	SIS/RILIS	^{32,34}Mg,$^{30-34}$Al, K,Sr,Fr,Ac	$^{30-33}$Na, $^{70-78}$Ni, $^{78-80}$Zn, $^{130-135}$In, $^{130-137}$Sn
4	TM3	Ta-LP	SIS/RILIS	^{11}Be (TIGRESS), ^{8}Li (bNMR, MTV)	^{7}Be
5	TM4	Nb-HP	SIS/RILIS	^{8}Li (bNMR, MTV), ^{74}Rb(TITAN), ^{76}Rb (TIGRESS), ^{76}Sr (Laser)	^{78}Y, ^{7}Be
6	TM3	UC-LP	FEBIAD or SIS/RILIS	FEBIAD: $^{26-30}$Ne (TITAN) (14 shifts) SIS/RILIS: ^{31}Na (OSAKA) and see above	FEBIAD: Ar, Ne, Kr, Xe, I
		Th	IG-LIS		At, Ac, Fr,
		UC	IG-LIS		Cd, Sn,

Longer term developments (earliest in Schedule 127)

- Ta/IG-LIS (could also be working for 8Li, 11Li), 110Ag, 7Be
- Rotating beam (combine with Ta/IG-LIS?)
- Thorium – Need license amendment, material development