

Impact of COVID on 2020-2021 Low-energy ISOLDE activities

**88th ISOLDE Collaboration Committee meeting
23rd of June 2020**

Joachim Vollaire on behalf of EN-STI



ENGINEERING
DEPARTMENT



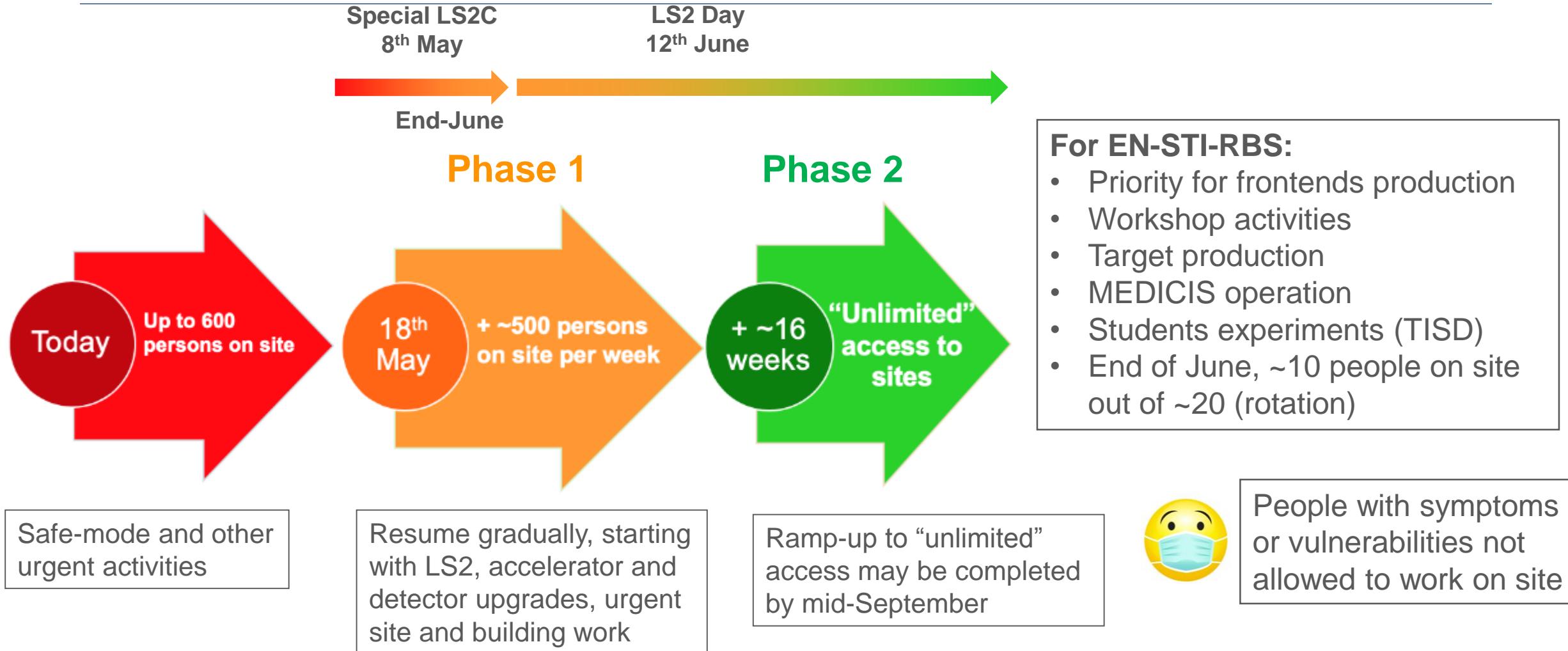
Outline

- Situation and organization since mid-March
- Status and plans for frontends replacement finalization
- Plans for the new Fast Tape Station
- Nano-Laboratory construction and actinide target production
- Report on TISD activities
- MEDICIS update

Situation and organization since mid-March

- Mid-March the facility was put in a “safe mode” and all activities on-site (including LS2 projects) were suspended ➔ **teleworking**
- Remote teleworking was beneficial and productive for the majority but less relevant for colleagues doing mainly hands-on work. Important also to keep social connection with “isolated” colleagues (stay-at-home order for France).
- Focus on training, documentation and technical specification for tendering process (new target vessel contract, nano-laboratory equipment....)
- Continue the excellent collaboration with all ISOLDE stakeholders (standing meetings maintained and additional ones).
- Ensure proper representation of ISOLDE in CERN wide committees. Very important when discussing priorities and support from technical teams.

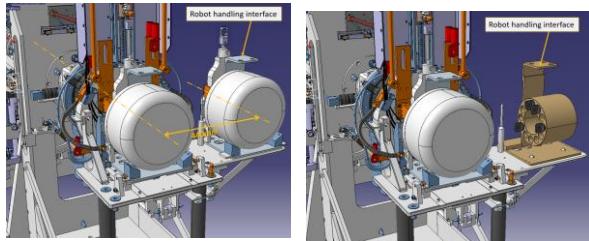
CERN plan for restart



FE10 production status (installation on GPS)

- FE10 in Building 179 successfully vacuum tested during the last weeks
- Preparatory activities (alignment, cabling....) inside the GPS Faraday cage in view of the Frontend installation

New irradiation table



GPS Faraday Cage



PLANNING - EDMS 2339464		mars 2020			avril 2020			mai 2020			juin 2020			juillet 2020			aout 2020			septembre 2020			octobre 2020				
Tache	FE10 sur GPS (impact 123409)	Resp.	COVID BREAK																								
Dans local T73/R-021:																											
1 finaliser design et calcul de l'extension table amarrage	JC	terminé !																									
2 fabrication et test de l'extension table amarrage	JC+DA																										
3 montage des joints métal sur les TP et test pompage	CCP+JC	montage terminé !																									
4 montage des boites de connections TP	AG																										
5 cablage pin 8 et "current return"	JC	pin 8 terminé !																									
6 fabrication, nettoyage et montage lignes de gaz (3x)	JC+DA	en cours																									
7 fabrication et montage des cables RF (2x)	PH	en cours																									
8 test des lignes RF	SR	en cours																									
9 fabrication et montage du panneau SHV et câbles	JC	en cours																									
10 cablage switch additionnel n°1 table amarrage	PH																										
Préparations dans faraday cage GPS :																											
20 retirer les cables Liebe et ancien RF	RC	terminé !																									
21 montage des nouvelles bases de pieds (3x)	SM+JC	terminé !																									
22 remplacer et labelliser les connecteurs fluides eau-air	SM+JC																										
23 préparer et installer le multicommunicateur fluides	SM+JC																										
24 raccourcir la gaine flexible du Box Tube	SM																										
25 tirage cables dans Bois Tube (tous dans gaine flexible)	RC+SR																										
26 adapter et remplacer nouveau ventilateur	SM+AG	Adaptateur terminé !																									
27 définition et fabrication nouvelle coiffe de jonction HT	JC+SM																										
28 nettoyage de la faraday cage	tous																										
29 Scan 3D de la Faraday Cage GPS sans FE10	AB																										
Installation FE10 :																											
30 mettre le robot GPS en position	FR+JLG																										
31 remontage des B1 (wire grid, faraday cup...)	V/+RD																										
32 déplacer le FE dans la Faraday cage	SM+JLG																										
33 alignement grossier +/- 2mm	SM+JC																										
34 alignement fin +/- 0.1mm	AB																										
35 connection chambre à vide sur la beam line	JF+CCP																										
36 connecter la partie vide (tombac, alim...)	AG																										
37 connecter la partie HT (puissance, contrôle, air, eau...)	SM+JC																										
38 connecter la partie contrôle (switches, potentiomètres...)	CM																										
39 connecter la partie beam optics (quads, déflecteurs...)	JC																										
40 connecter la partie B1 (wire grid, faraday cup...)	MD																										
41 optimiser longueur cables (retirer vers séparateur) et connect.	tous																										
42 changement du vérin de la porte	JC																										
43 vérification des trajectoires robot + nouvelle position	FR+JLG																										
44 tests mécaniques	SM+CM																										
45 tests vacuum	JF+AG																										
46 installation de la nouvelle coiffe	JC+SM																										
47 Scan 3D de la Faraday Cage GPS avec FE10	AB																										
Tests on-line en mode off-line	SR																										

Responsabilités:
 Coordination: S.Marzari (SM)
 Mécanique: SM + J.Cruishank (JC) + D.Aubert (DA)
 Vidéo: J.Ferreira (JF) + A.Gutierrez (AG) + C.Collomb-Patton (CCP)
 Tests off-line: S.Rothe (SR)
 Contrôle FE: C.Mitifiot (CM)
 Beam Instrumentation: W.Andreazza (WA) + M.Duraffour (MD)
 Cablage: R.Catherall (RC) + P.Harwood (PH) + S.Rothe (SR)
 Alignements: A.Behrens (AB)
 Robot et camera: Francesco Riccardi (FR) + JL.Grenard (JLG)
 HT : Thierry Gharsa (TG)
 Radioprotection: A.Dorsival + M.Deschamps + C.Saury
 General Safety: AP.Bernardes + R.Martins

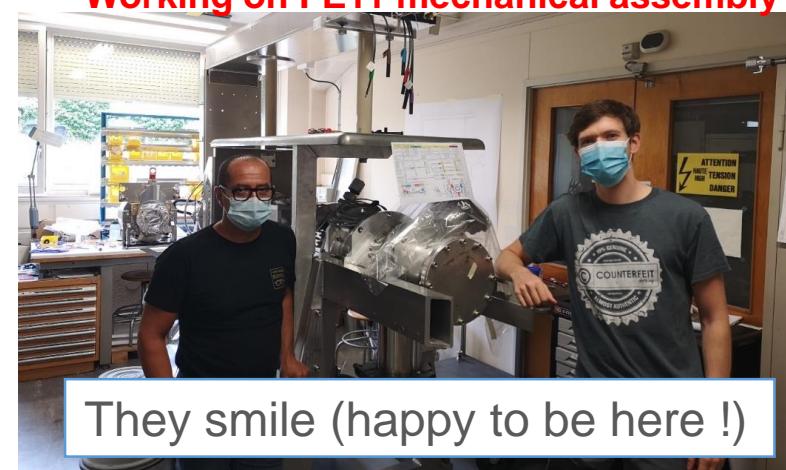
FE to the target area

Stable beams



FE11 production status

- Stable beam testing period at offline2 starting in August
 - New contract for J. Cruikshank until end of Jan. 2021 (+ 6 months, exceptional circumstances)



Nano-Laboratory Construction

Situation mid March



Situation mid June



Part dedicated to radioactive material storage (heavy density concrete)

Construction could resume after a few weeks of interruption only in agreement with host state regulations and management approval

New nano-laboratory – operational constraints

Laboratory for UCx production (no nano-material handling allowed)

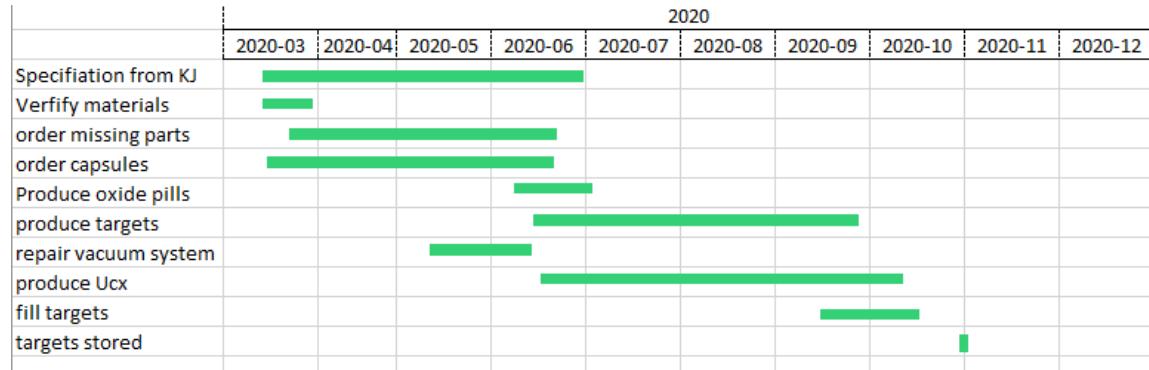


No nuclear ventilation in the ISOLDE laboratories until end of May in 2021

Phase 2		20-Oct	Novembre 20	Décembre 20	Janvier 21	Février 21	Mars 21	Avril 21	Mai 21																			
		S45	S46	S47	S48	S49	S50	S51	S52	S53	S54	S55	S56	S57	S58	S59	S60	S61	S62	S63	S64	S65	S66	S67	S68	S69	S70	S71
SMB	Carottage murs jonction																											
	Carottages bâtiments existants (contrat cadre CERN)																											
	fermeture porte temporaire et dépose portes existantes																											
	Encoffrement feu pour gaines CV																											
	Résines au sol																											
	Fin peintures au murs (2ème couche)																											
	Retour étanchéité équipement																											
	Pose murs et ses démontables																											
	Pose des faux plafonds																											
	Pose des dernières portes																											
	Caffeutrement coupe-feu																											
CV	Pose des supports gaines + CdC																											
	Pose des gaines & fluides																											
	Pose des équipements aérauliques																											
	tirage des câbles																											
	Installation etancheité aux démontables existants																											
	l'outil technique																											
	Raccordement équipement process																											
	Pose des grilles de ventilation																											
	Commissioning																											
	tests incendie																											
EL/EIC	Installation support & CdC tous																											
	tirage des câbles dans CdC																											
	Pose des luminaires																											
	Pose des goulettes et des descentes de prises depuis CDC																											
	Luminaires																											
EL/FC	tirage des câbles pumpstands																											
	tirage des câbles de détection incendie																											
	tests des câbles incendie																											
IT	déplacement cable GSM																											
	tirage des câbles IT																											
	goulettes + boîtes plugs																											
	tests																											
Détection Incendie	Installation équipements + renifleurs																											
	Tests																											
Gaz	Installation																											
	Travaux extérieurs+ tests																											
Process	Déménagement Pumpstands																											
	livraison équipements																											
	Installation équipements																											
	tests équipements																											
Access control	livraison/installation RW storage																											
	tirage de câble jusqu'à porte entrée																											
	installation équipement																											
	raccordement porte																											
RP	tests																											

Targets for 2021 (anticipate in 2020)

UCx targets pre-production in view of nanolab ventilation cut Q1-Q2 2021



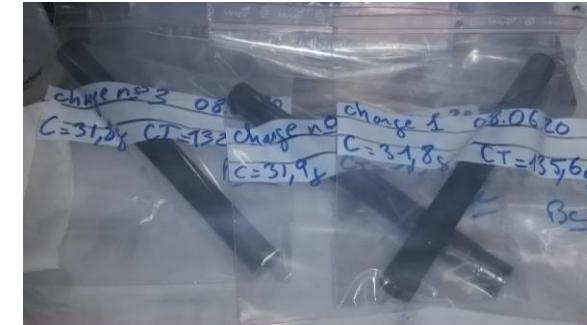
Targets to be reused for 2021

- #654-UC-MK1-W
- #635-UC-MK1-Ta
- #534-Sn-VD7
- #619-Pb-VD
- #653-UC-Ta-n
- #641-UC-Ta

Also available: Targets from TISD tests

- #638-UC-MK1-Re
- #659-UC-VD7
- #668M-UC-VD5
- #637-UC-MK1-W

UO+C pills production ongoing



10 targets in queue

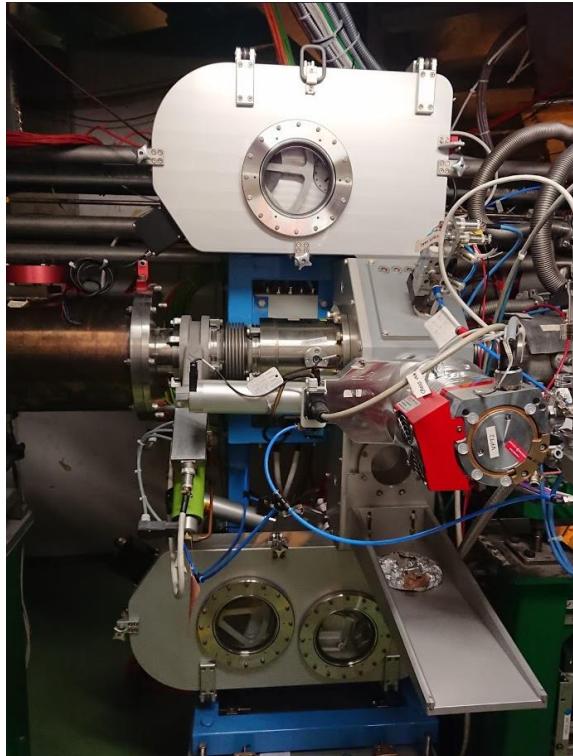
708-UC-MK1	713-UC-VD5
709-UC-MK1	714-UC-VD7
710-UC-MK1	715-UC-MK1
711-UC-MK1	716-UC-MK1
712-UC-MK1	717-UC-MK1

Production of storage container ongoing



B. Crepieux, M. Owen, S. Rothe

New Fast Tape Station



- **Low level controls** to be tested/fixed *EN/SMM* (ongoing)
- Basic **high-level application** / Beam instrumentation display by *BE/OP* (from Oct 2020)
- Advanced **yield measurement application** via *EN/STI* (2021)
- **Detectors** (4π beta | (beta/)gamma | alpha) with strong support by *EP/SME* (2020|2021|2022)
- Investigating SiPM electronics designed by IFIN (*Bucharest, Romania*)
- **Tapestation 2** at GLM on hold till TS1 advanced



<https://doi.org/10.1016/j.nima.2019.163263>

Courtesy of S. Rothe

Target and Ion source development 20/21

Welcome new arrivals !

Short descr.	Target #	Ion source	Target	Mass marker / available beams	Beam to	Proposed exp/ descr.	Constraints	Linked experiment/ proposal	Contact person
VADLIS Te/Cs-suppression	Tbd 1	VADIS mod.	none	Te Cs Noble gasses	FC490	Measure Te RILIS efficiency pump-probe Test Cs suppression	Clean FE RILIS	Collaps Te (INTC-P-561) TAS n-rich In (INTC-P-559)	BM
VADLIS Ion load	Tbd 1	VADIS Mod.	none	Sm (contaminat tbd. Rb,Cs) Noble gasses	FC490	Measure the RILIS efficiency vs ion load and VADLIS potentials	Clean FE RILIS	General VADLIS performance	BM
2Photon	Tbd 2	VADIS + mirror	none	Rb (tbc.) Noble gasses	FC490	Perform in-source 2 photon laser spectroscopy in-source	Clean FE RILIS Laser from CRIS	~All in-source laser spectroscopy	KC
Ti efficiency 1	Tbd 3	Mk1-Ta	Container	Enriched Ti isotope in target container	FC490	Measure RILIS efficiency	Clean FE RILIS	44Ti	srr
Ti Efficiency 2	Tbd 3	Mk1-Ta	Container	Sample prepared from PSI w. nat.Ti	FC490	Measure efficiency under real conditions. Measure 44Ca contamination Transport through HIE isolde ?	Clean FE RILIS	44Ti	srr
LIST @ GPS	Tbd 4	PI LIST	none	Mg (tbc) Na (tbc)	FC490	LIST commissioning	Clean FE RILIS	IS456, (P556)	RH
LIST @ HRS	Tbd 4	PI LIST	none	Mg (tbc) Na (tbc)	FC490	LIST commissioning	Clean FE RILIS	IS456, (P556)	RH
PI-list prep					CA0	Verification that slotted extraction electrode tip has no effect. Back to back comparison of beam transmission through the machine Transmission, beam shape, mass resolution, (emittance)	Clean FE	IS456, (P556), LISA	RH
PI-LIST spectroscopy	Tbd 4	PI-LIST	none	Tbd. Rb? Good from laser side, but low temperature evaporation not representative	FC490	Perform offline hres spectroscopy	RILIS NB	IS456, (P556), LISA	RH
RILIS@Actinides	#638	MK1-Re	UC-2018-12	Li Sm	MED	Laser ionize actinides from UC targets (Pu, Np, ...). Also check Pm, Tc	2 weeks in NOV @ MED MELISSA	LISA	RH
Actinide Molecules VD7	#659	VD7	UC-2018-05	Standard leak	ISOLTRAP	Systematic study of beam composition : mass / target temp / level of fluorination. Probe molecular breakup using RILIS	MRTOF RILIS	LISA	srr, MA
Actinide Molecules VD5	#668M	VD5	UC		ISOLTRAP	Systematic study of beam composition : mass / target temp / level of fluorination. Probe molecular breakup using RILIS	MRTOF RILIS	LISA	srr, MA
Actinide Molecules MK1	#637	MK1-W	UC	Big leak 1.1E-4 RaF molecules for CRIS ?	ISOLTRAP	Systematic study of beam composition : mass / target temp / level of fluorination. Probe molecular breakup using RILIS	MRTOF RILIS	LISA RaF (INTC-P-555)	srr, MA

RILIS

LIST

Molecular beams

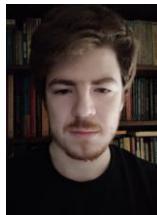
S. Rothe on behalf of TISD team

Mechatronics FTEC
Facility support



Y. Gracia

Material Science FTEC
Target development



E. Reis

PhD Student Jun. FELL
Molecular Beams



M. Au

MEDICIS Status Report (02/20 to 06/20)



- Technical
- Successf
- Installatio
- MEDICIS
- Laser align on 15th of
- First rece (Sm-153
- MEDICIS website is now available!
- <https://cern-medicis.web.cern.ch/>

(Covid)
y 2020
ear with MELISSA

26th of June 2020

C. Duchemin on behalf of MEDICIS



Thank you for your
attention!



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