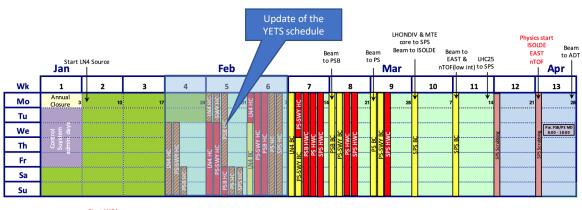
## **INTC 70: ISOLDE coordinator presentation**

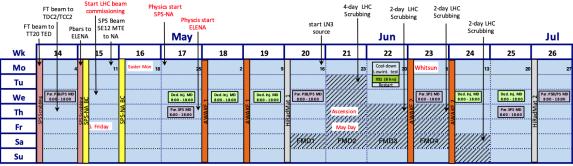


- 2022 schedule and feedback from first runs
- Around the hall: Space and new setups a growing challenge

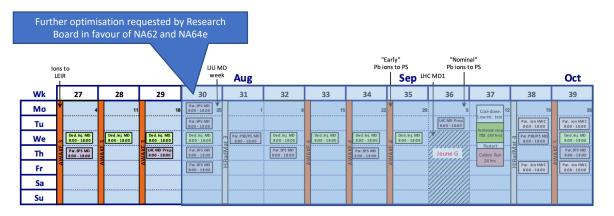
- First dates for 2023
- Training

### Accelerator schedule for 2022





- ISOLDE physics start: March 28th
- End of protons, not necessarily of physics: November 28th (but short period for winter physics).
- 245 days of physics
- Very high demand throughout the complex. Number of supercycles can be limited at times: change of supercylces is out of booster's direct control



	lons to	o SPS		LHC	MD2 Pbid	ns to	nd SPS-NA Protons Physics SPS-NA	start	ISOLDE, nT	ysics End Injer OF, East run (	ctors & LHC @ 06:00		
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Мо	Par. Pb Comm 8:00 - 18:00	Par. Pb Comm 8:00 - 18:00		24	31	Par. Pb Comm. 8:00 - 18:00 7	DSO test lons	4 21	28	3	<b>↓</b>	19	26
Tu	Par. Pb Comm. 8:00 - 18:00	Par. Pb Comm 8:00 - 18:00	Par. Pb Comm. 8:00 - 18:00		LHC MD Prep. 8:00 - 18:00	Coldex Run 24 hrs	Rad. Survey						
We	Ded.lnj. MD 8:00 - 18:00	Par. Pb Comm 8:00 - 18:00	Ded. Pb Comm 8:00 - 18:00	Par. PS8/PS MD 8:00 - 18:00		Ded. Pb Comm. 8:00 - 18:00	Par. SPS MD 8:00 - 18:00	Par. SPS MD 8:00 - 18:00	G G	ی	V	тс	ual
Th	Par. SPS MD 8:00 - 18:00		Par. Pb Comm. 8:00 - 18:00	adM		ł	Par. SPS MD 8:00 - 18:00	Par. SPS MD 8:00 - 18:00	MAKE	WAKE	,	13	Ann
Fr	<b>▼</b>	Par. Pb Comm 8:00 - 18:00	Par. Pb Comm. 8:00 - 18:00	Ħ				4-wook SD	S-NA Pb Rui	A			
Sa									Pb-Pb Rui				
Su				9									

Experimental facility	Start Physics	End Physics	Duration 2022 [days]*	Duration 2018 [days]*
ISOLDE	28.03.2022	28.11.2022	245	217
nTOF	28.03.2022	28.11.2022	245	224
PS East Area	28.03.2022	28.11.2022	245	224
SPS North Area p+	25.04.2022	14.11.2022	203	217
ELENA (AD)	28.04.2022	12.12.2022	228	196
SPS North area Pb ions	14.11.2022	12.12.2022	28	28
AWAKE	02.05.2022	12.12.2022	84	91
HiRadMat	16.05.2022	31.10.2022	35	25

\*TS, MD time, etc. not deducted

### Beam requests and schedule for 2022

As can be seen: very high demand, but more competing opportunities also exist (not the case last year) e.g. conferences, experiments elsewhere, holidays(!)

Miniball is back in 2022, but no T-REX in 2022. Delays with DAQ mean stable beam only from September onwards.

Almost 50% of the shift request for HIE ISOLDE but only 50% of the running period possible.

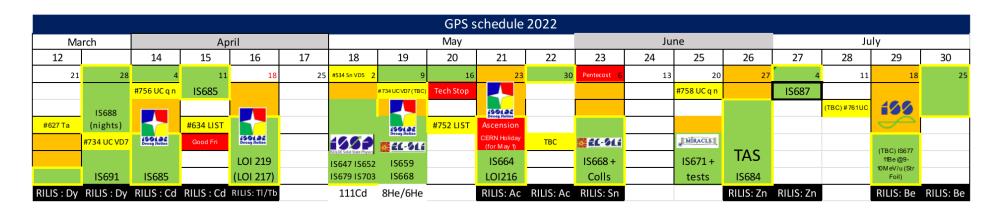
Issue with the 7gap (and delay with Miniball) has resulted in August being reshuffled with focus on beam development and low energy

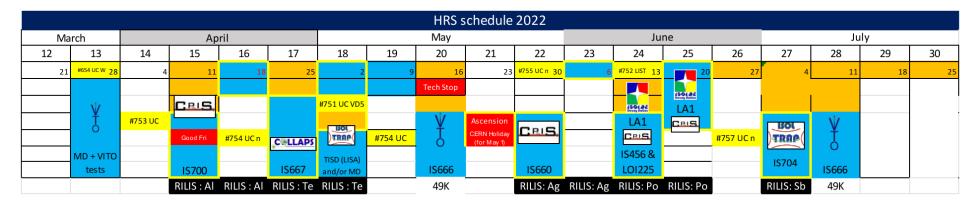




Row Labels 🔽 Count	of Experiment Sum of R	Requested shifts
<b>■ Biophysics</b>	1	5
<b>⊞ COLLAPS</b>	2	22
<b>⊞ CRIS</b>	6	61
⊟HIE	32	394
ACTAR	1	21
ISS	10	104
Miniball	17	184
XT03	1	23
XT03: Edinburgh	1	42
XT03: SEC	2	20
<b>⊞ IDS</b>	10	76
<b>⊞IDS</b>	1	15
<b>■ IDS / ISOLTRAP</b>	1	6
<b>■IDS/TAS</b>	2	7
<b>∃IDS/TISD</b>	1	2
<b>■ In-source/IDS</b>	2	10
<b>■ ISOLTRAP</b>	1	8
<b>■ Medical</b>	3	12
<b>■ MIRACLS</b>	3	0
⊞SSP	26	57.5
<b>⊞TAS</b>	2	37
<b>⊞ TISD</b>	10	27
<b>⊞ VITO</b>	4	23
<b>⊞ Wisard</b>	1	24
<b>■ ISOLTRAP/TISD</b>	1	31
Grand Total	109	817.5

### ISOLDE Schedule 2022: weeks 12 - 30







Start of protons for physics: 28 March End of protons for physics: 28 November



So far 20 experiments have run with ~187 shifts delivered for low energy physics (and some beam development)

IVId	ııcıı		Αþ	ш		ı		ıvıay				Ju	IIC			Ju	ту	
12		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
21	28	4	11	18	25	#534 Sn VD5 <b>2</b>	9	16	23	30	Pentecost 6	13	20	27	4	11	18	25
		#756 UC q n	IS685				#734 UC VD7 (TBC)	Tech Stop					#758 UC q n		IS687			
	IS688								150122 Decay Ration							(TBC) #761UC	199	
#627 Ta	(nights)		#634 LIST				199132 Decay Station	#752 LIST	Ascension									
	#734 UC VD7	199132 Decay Ration	Good Fri	19912E Decay Ration		1992	Decay Ration		CERN Holiday (for May 1)	ТВС	<b>26-91</b>		MIRACLS					
				LOI 219		IS647 IS652	TAL .		IS664		IS668+		IS671+	TAS			(TBC) IS677 11Be @9-	
	IS691	IS685		(LOI 217)		IS679 IS703			LOI216		Colls		tests	IS684			10 M eV/u (Str Foil)	
RILIS : Dy	RILIS : Dy	RILIS : Cd	RILIS : Cd	RILIS: TI/Tb		111Cd	8He/6He		RILIS: Ac	RILIS: Ac	RILIS: Sn			RILIS: Zn	RILIS: Zn		RILIS: Be	RILIS: Be

								HRS s	chedule	2022								
Ma	arch		Ар	ril				May				Ju	ne			Ju	ly	
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
21	#654 UC W 28	4	11	18	25	2	9	16	23	#755 UC n 30	6	#752 LIST 13	20	27	4	11	18	25
								Tech Stop					(50) A					
	\ <sup>†</sup> /		CRIS.			#751 UC VD5						19919E	designation LA1					İ
	Ť	#753 UC				ROF		<u>V</u>	Ascension			LA1	CRIS,		ISOL	\\V		İ
	O		Good Fri	#754 UC n	C@LLAPS	\===a	#754 UC	T	CERN Holiday (for May 1)	CRIS.		CRIS		#757 UC n	TRAP	Ť		
	MD + VITO				*	TISD (LISA)						IS456 &			10704	0		
	tests		IS700		IS667	and/or MD		IS666		IS660		LO1225			IS704	IS666		
			RILIS : Al	RILIS : Al	RILIS : Te	RILIS : Te		49K		RILIS: Ag	RILIS: Ag	RILIS: Po	RILIS: Po		RILIS: Sb	49K		

### Feedback from runs

- As Joachim mentioned today: relatively few requests for "standard" target units e.g. no UC Ta on GPS until 11<sup>th</sup> week of physics...
- LIST is now becoming a highly requested unit.
  - Needs considerable setting up time and expertise.
  - Difference in behaviour between GPS and HRS: loss of time structure in PI-LIST mode due to the ISCOOL. (solution would be upgrade of beamgates)
  - RILIS can't be considered "standard" operation for such runs either: extra resources for personnel would be useful. Some fine-tuning of schedule has been required
- Quartz lines also being requested more frequently, still some development work needed e.g. water leak developed during Cd run.
- Heavy period for IDS, but strong local team has coped well.
- Position of proton beam has been an issue especially for neutron convertors: needs to be confirmed in future commissioning runs at beginning of year.
- Reuse of previous targets has been mostly successful: vacuum leak after 5e18 protons not seen as before. Inevitably some failures....

# MEDICIS and the Irradiation station

- Relatively quiet period for MEDICIS
- Some irradiations have been made
- The issue with the proton beam position is of particular relevance for MEDICIS.
- GPS irradiation station has been producing much higher activities.
- MEDICIS frontend has been useful for checking some used ISOLDE targets.

100	Mae										
ISOLE	E Week	24 2022		GPS	HRS	CA0	MEDICIS	GPS IS	p's	Visits	other
Monday	13/06/2022	PM night	Po setup	1000: Retrieval of 724M surface collections possible when no target changes ongoing.	1400 #752 LIST		AM test of Montrac trolley. PM #722M to HRS irradiation point	724M until 1000	NORMGPS		PM HV work by Christophe Mitifiot
Tuesday	14/06/2022	AM PM night	RILIS: P	surface collections possible.	stable setup	=			NOR		
Wednesday	15/06/2022	PM night		GPS target to be cooled to conservative value	stable setup continues  (if ready) p+ scan  stable beam to setups	_				1400 Proto TENMAK (T Nuclear a	E staglares. col visit from 'urkish Energy ind Mineral ncy): guide KJ
Thursday	16/06/2022	PM night			(else) p+ scan and yields IS456 LOI225 IS456 LOI225	HRS					
Friday	17/06/2022	AM PM night	S: Po		IS456 LOI225 IS456 LOI225 IS456 LOI225	ПКЭ			ss.		
Saturday	18/06/2022	AM PM night	RILIS:		IS456 LOI225 IS456 LOI225 IS456 LOI225	-			NORMHRS		
Sunday	19/06/2022	AM PM night			IS456 LOI225 IS456 LOI225 IS456 LOI225				ž		
Monday	20/06/2022	AM PM night			IS456 LOI225 IS456 LOI225 IS456 LOI225						

Summary of week: IS668 runs with Ga until Monday morning. Then RILIS will switch and there are several target manipulations on the irradiation station and for HRS. GPS can continue with surface collections until Tuesday at least. Target will stay online, please cool it down while not in use. HRS setup on Tuesday and Wednesday. Proton scan and yields on either Wednesday or Thursday morning. Physics from Thursday evening onwards.

GPS: #751 UC Target for Ga run. Setup at 30kV. Beam to GHM for emission channelling of Ga. Other surface collections possible in GLM until Tuesday or Wednesday

HRS: S. #752 UC LIST, HT = 40kV (TBC), in bunching and transmission mode. Po beams to LA1, IDS and CRIS, Protons on-target

Protons: NORMGPS up to 2uA until Tuesday. NORMHRS up to 2uA from Thursday onward

Operations responsible: Simon (165711) until Tuesday 14th June. Emiliano (162562) until June 21s

ISOI DE Daily meeting: 09-15 Monday: 08-45 Tue-Fri via Zoom: https://punicourreach.room.us/i/088942103479nwt=WI ItSMIEKhVii/NVVKVtNOG5nMENE/

### ISOLDE Schedule 2022: weeks 12 - 36

										G	PS sched	dule 202	.2										
Ma	arch		Ар	oril				May				Ju	ine			Ju	ıly				August		
12	1138	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
21	28	4	11	18	25	#534 Sn VD5 2	9	16	3	30	Pentecost 6	13	20	27	4	11	18	25	1	. 8	15	22	. 29
		#756 UC q n	IS685				#734 UCVD7 (TBC)	Tech Stop					#758 UC q n		IS687				199				
	IS688					3	<b>£L-91</b> i		199192 Decay Station								199						
#627 Ta	(nights)		#634 LIST			1000		#747 LIST	As cension		<b>%</b> 2C-9L1												
	#734 UC VD7		Good Fri	199192 Decay Station		1992	(66)		CERN Holiday (for May 1)	TBC			EMIRACLES			(TBC)#761UC		199	TBC		Sn or Pb	1992	
		199192 Decay Ration		LOI 219		IS647 IS652	Droog Rollon		IS664		IS668+		IS671+	TAS			(TBC) IS877 11Be@9-	$\rightarrow$					Stable to
	IS691	IS685		(LOI 217)		1S679 IS703	IS668		LOI216		Colls		tests	IS684			10 M eV/u (Str Foil)	IS710 27Na@ 9- 10MeV/u		TISD/MD		Hg or Cd?	Miniball
RILIS: Dy	RILIS: Dy	RILIS : Cd	RILIS: Cd	RILIS: TI/Tb		111Cd	8He/6He		RILIS: Ac	RILIS: Ac	RILIS: Ga			RILIS: Zn	RILIS: Zn		RILIS: Be	RILIS: Be	27Na			199Hg	or 111Cd
							-											27Na					

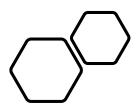




Target change CERN holiday Setting up/proton scan/yield

Physics HPS Physics GRS

RILIS run



### Concerns/issues for the Autumn

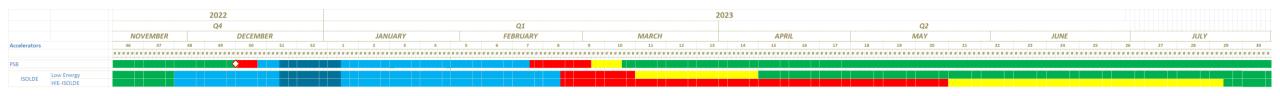
- 7gap vibrations could come back again
- Lack of commissioning time has resulted in loss of reference setups for HIE ISOLDE (which have been invaluable for low energy this year).
- EBIS not holding LHe as well as previously.
- Miniball will be one of the principal experiments in the Autumn: assuming that all will be up and running
- Delivery of H3 targets for HIE ISOLDE experiments.
- Expect that some teams won't be available at various stages in the Autumn
- Nonetheless a draft planning is being worked on which should be released quite soon.
- · Good news!
  - Euroloabs TNA will allow for more general support of users.



											H	IRS sche	dule 202	2										
	Mar	ch		Ар	ril				May				Jur	ne			Ju	ıly				August		
13	2	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
	21	8654 UCW 28	4	11	18	25	2	9	16	23	#755 UC n 30	6	#752 LIST 13	20	27	4	11	18	25	1	. 8	15	22	29
									Tech Stop				-							(TBC)		XXX UC n		
		\tau		CRIS			#751 UC VD5						LA1											
		Ť	#753 UC	L					V	Ascension							۱į̇́/							
		Ó		Good Fri	#754 UC n	CULLAPS	TRAP	#754 UC	Ť	CERN Holiday (for May 1)	CRIS.		CRIS.		#757 UC n	TRAP	¥							
		MD + VITO					TISD (LISA)		0	(			IS456&				Ò					199195		Stable to
		tests		IS700		IS667	and/or MD		IS666		IS660		LO1225			IS704	IS666				TISD/MD	IS622		Miniball
				RILIS: Al	RILIS: AI	RILIS: Te	RILIS: Te		49K		RILIS: Ag	RILIS: Ag	RILIS: Po	RILIS: Po		RILIS: Sb	49K					RILIS: Cu		



# ISOLDE: draft planning for 2023 (still at discussion stage)



### Key Dates:

- Low energy
  - Hardware Commissioning from the 24/02/2023 to the 12/03/2023
  - Beam Commissioning from the 13/03/2023 to the 09/04/2023
  - Beam for ISOLDE physics: 10/04/2023
- HIE-ISOLDE
  - Hardware Commissioning from the 24/02/2023 to the 21/05/2023
  - Beam Commissioning from the 22/05/2023 to the 19/07/2023
  - Beam for HIE physics: 20/07/2023

### **Relevant information**

- Despite being in the YETS maintenance and installation works period HIE-ISOLDE requires stable Cryo plant cooling conditions up to the end of week 50 (16/12/2022 for 2 wks controlled warm up of the Cryo Modules)
- Start of hardware commissioning in week 8 for the HIE-ISOLDE depends on the completion of cooling maintenance
- Start of hardware commissioning in week 8 for the low energy ISOLDE depends on the completion of ventilation works
- Beam from PSB to Low Energy ISOLDE in the beginning of week 13 (27/03/2023 for 2wks setting up BTY and SEMGRID tests)

Prepared with E. Siesling, J. Vollaire and J. A. Rodriguez

Reminder of backlog (including INTC69, but not the running period this year)

Row Labels	Count of Count	Sum of Shifts remaining before 2022 till end of Run3
biophysics	1	9.5
COLLAPS	4	39
Collections: 108Ag	1	30
Collections: 163Ho	1	5
CRIS	7	86.5
Gandalph	1	8
Gandalph/CRIS	1	6
HIE ISOLDE	35	548
ISS	11	135
ISS/Miniball	1	17
Miniball	17	275
Prototype	1	0
SEC	1	23
XT03	1	23
XT03: Actar	1	21
XT03: Corset	1	12
XT03: Edinburgh	1	42
IDS	15	170.5
IDS/ISOLTRAP	1	6
ISOLTRAP	5	43
Medical physics	2	11
MIRACLS	1	17
SSP	11	97.5
TAS	4	53
TISD	8	37
TISD/IDS	1	9
Travelling Setup	2	17
Travelling Setup; ECSLI	1	0
VITO	1	28
WISARD	1	24
TISD/Miniball	1	4
TISD/TDPAC	1	4
Grand Total	106	1253

# INTC 70 summary

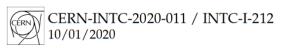
ISOLDE	13	232
Decay spectroscopy	3	55
Addendum	1	4
Letter of Clarification	1	23
Proposal	1	28
HIE	4	62
Letter of Clarification	1	21
Proposal	3	41
Laser Spectroscopy	3	49
Letter of Intent	1	16
Proposal	2	33
Mass spectrometry	1	18
Proposal	1	18
Proton upgrade	1	28
Proposal	1	28
Solid state	1	20
Proposal	1	20

https://indico.cern.ch/event/1162031/



Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

Upgrade of the UHV-system ASPIC for the investigation of surfaces and two-dimensional materials by ultra-low energy implantation and deposition of radioactive probe atoms



Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

MULTIPAC-Setup for γ–γ Perturbed Angular Correlation Experiments in Multiferroic (and Magnetic) Materials

January 8th 2020

# New setups/space in the hall



CERN-INTC-2020-003 / INTC-I-209 08/01/2020

Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

PUMA: antiProton Unstable Matter Annihilation

January 6, 2020



CERN-INTC-2020-007 / INTC-I-210 08/01/2020

Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

Upgrade and scientific programme of *LUCRECIA*, the Total Absorption Spectrometer at ISOLDE

Jan - 8th - 2020

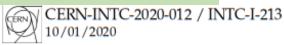


CERN-INTC-2020-008 / INTC-I-211 08/01/2020

Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

eMMA - Development of an emission Mössbauer apparatus at ISOLDE for the investigation of magnetic materials

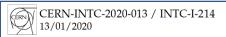
[8.01.2020]



Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

Research plans for the laser-polarization beamline VITO at ISOLDE

8 January 2020



Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

(Following HIE-ISOLDE Letters of Intent I-119, I-191, I-194, I-195 and Memorandum INTC-M-020)

The SpecMAT active target

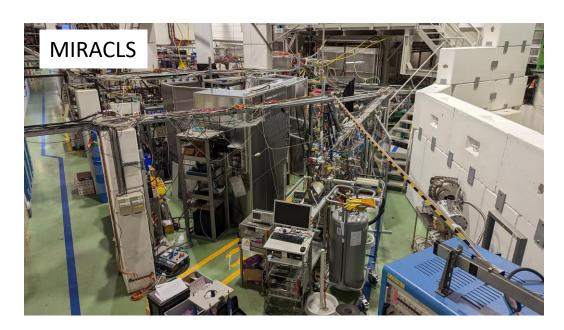
January 13, 2020



MIRACLS- the Multi Ion Reflection Apparatus for Collinear Laser Spectroscopy of radionuclides

January 11, 2020

### New/Updated setups: challenge of space in the ISOLDE hall









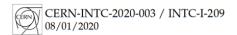
# ASPIC/ASCII

Ultra-low energy implanation Control of probe isotopes



### **EMMA**

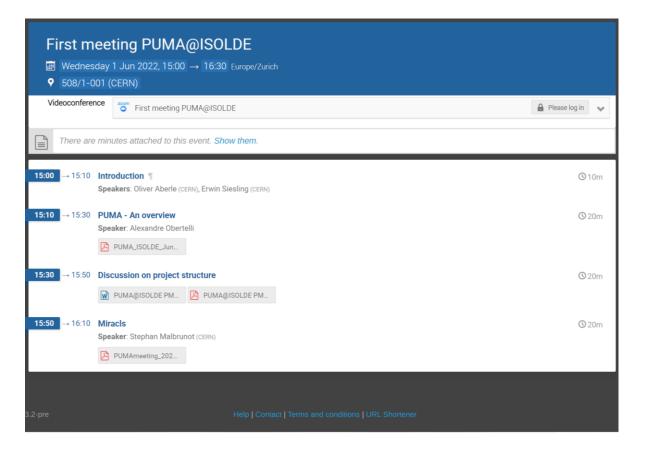




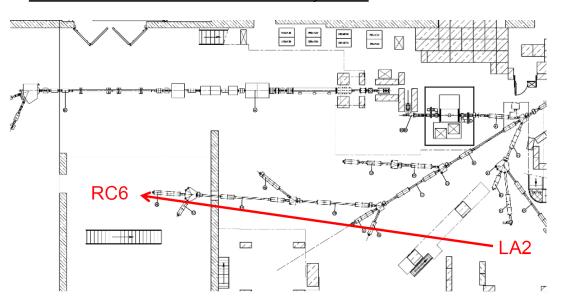
Letter of Intent to the ISOLDE and Neutron Time-of-Flight Committee

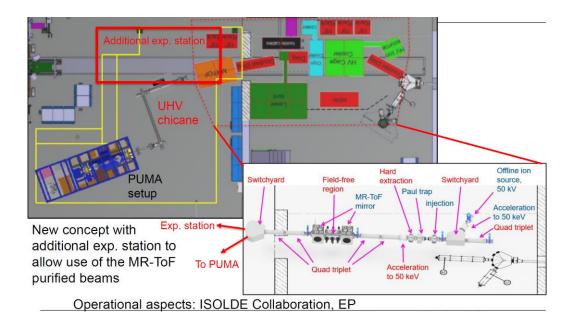
#### PUMA: antiProton Unstable Matter Annihilation

January 6, 2020



### Relocation MIRACLS: 2022 - early 2023

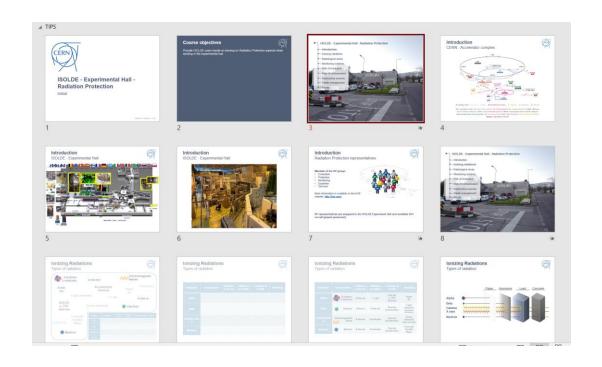




# **Training**

- In addition to the (ever-growing) number of online courses...
- Hands-on RP and Electrical training
- 15 day deadline before scheduled course is cancelled. (has led to issues last year)
- New EP-wide electrical course for all users/staff who need to work in an experimental area (legal requirement)
- Both will take place on Tuesday but time has increased:
  - EP course 0830 till 1230
  - RP course 1400 till 1630
- Availability of Electrical course not very stable. <u>Taking all</u>
   online courses will grant electrical training ranks (for the
   moment at least). Long term users based at CERN should
   try to take it when possible.

Ad hoc sessions are available, but (especially in running period!!) are difficult to manage



In LMS:

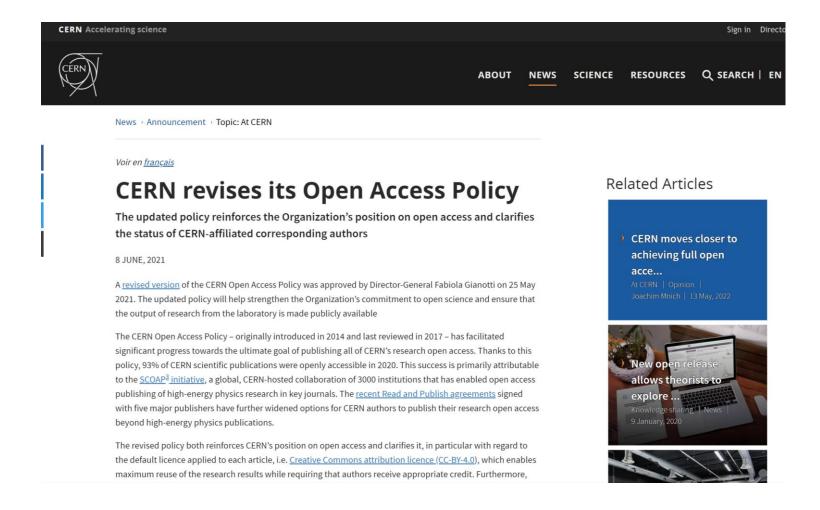
ISOLDE - Experimental Hall - Radiation Protection - Handling (Covid-19)

**Electrical Safety - Working in EP experiments** 

Discussion with safety training ongoing to see if the hands-on sessions are still required for the majority of users (RP)

For laser users: new LSSO (laser safety officer) course will need to be followed and be appointed for local representatives of laser labs.

### Publications: Open access

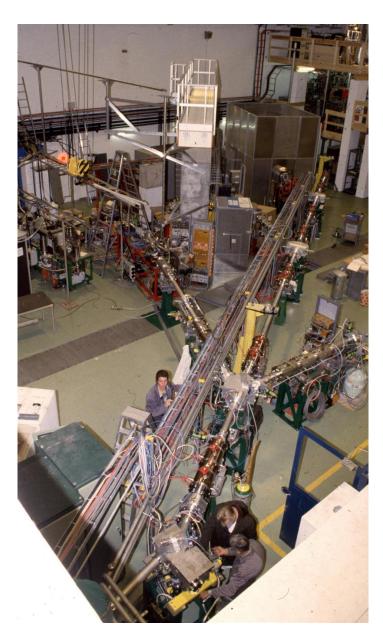


For any questions regarding publications originating from ISOLDE work: please contact the CERN Library (SIS) https://scientific-info.cern/submit-and-publish/publish-open-access

### 26 May 2022: 30 years since the inauguration of ISOLDE at the PSB











https://home.cern/news/opinion/cern/30-years-isolde-proton-synchrotron-booster