



**AIDA**<sup>2020</sup>

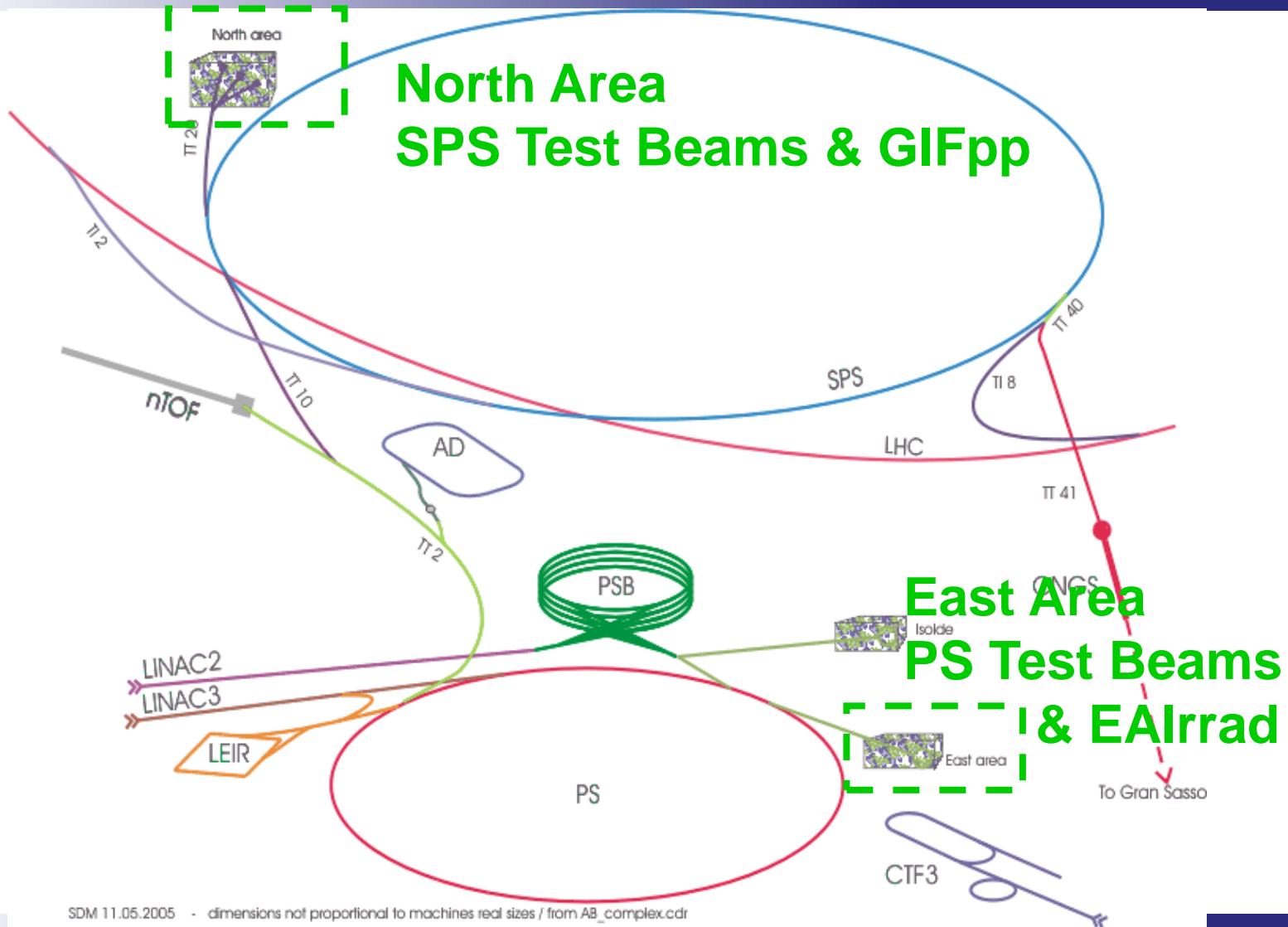
Advanced European Infrastructures  
for Detectors at Accelerators

# WP10.1: CERN test-beams TA

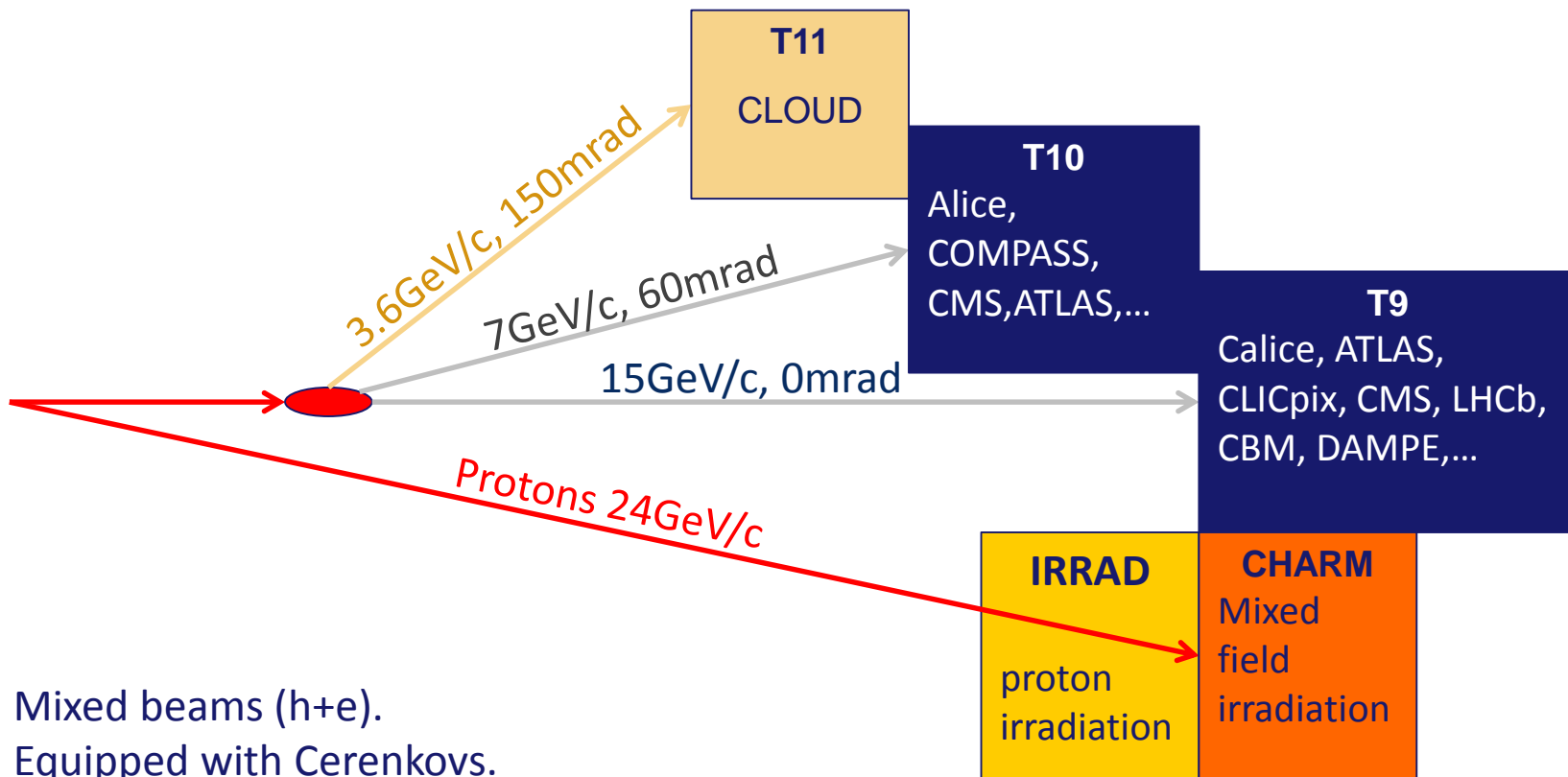
Sabrina El Yacubi, Livia Lapadatescu, H. Wilkens



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654168.



SDM 11.05.2005 - dimensions not proportional to machines real sizes / from A8\_complex.cdr



Mixed beams (h+e).

Equipped with Cerenkovs.

Max flux  $10^6$ p/spill.

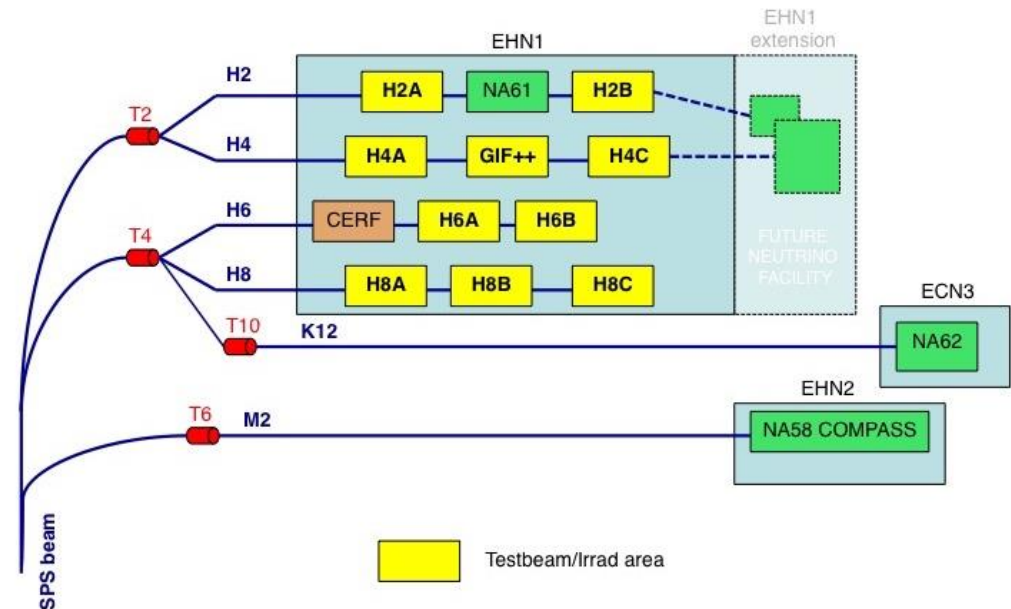
5 spills (400ms) / 30-40s supercycle (typ. 3 irradi, 2 testbeam)

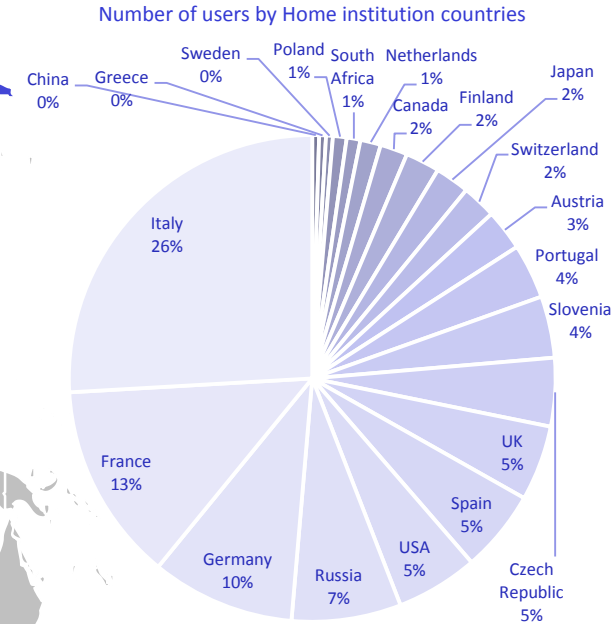
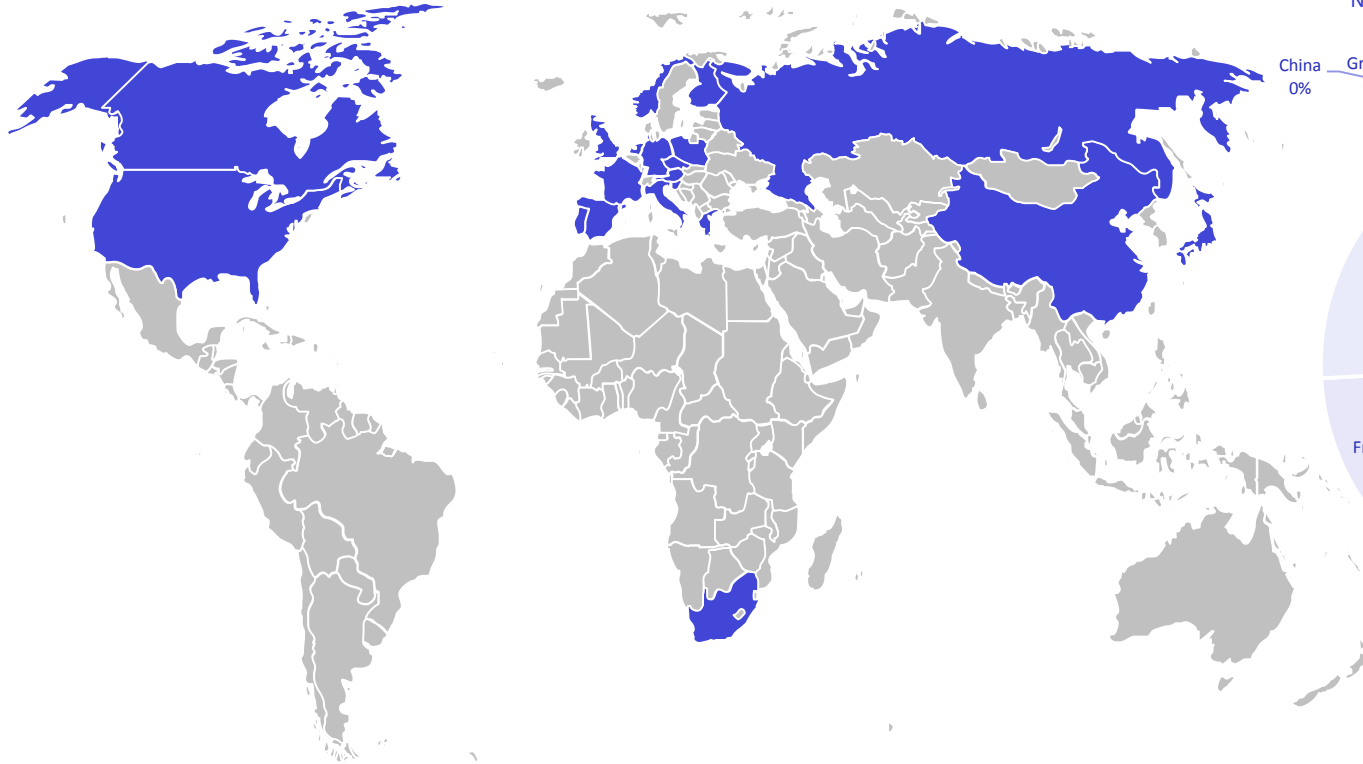


- The SPS proton beam (400/450 GeV/c) slowly extracted to North Area  
2 x 4.8s spills per ~ 30-40s supercycle
- Directed towards the three North Area primary targets **T2**, **T4** and **T6**

- From the primary targets:

- T2 → H2 and H4 beam lines  
(electrons from gamma conversions, 400GeV max,  $3-9 \cdot 10^7$   $\pi$ /spill max at  $10^{12}$ pot)
- T4 → H6 and H8 beam lines  
(electrons selected by Bremsstrahlung, 200/400GeV max, similar intensities as above), and P42/K12 beam line (NA62)
- T6 → M2 beam line  
(NA58/COMPASS)





In 2015-2016, 21 countries benefited from CERN TA support to their institutes employees coming to CERN test-beam facilities.



ALICE: ACORDE & PHOS.

ILC: CALICE (HCAL & SDHCAL), SiW-Ecal.

CMS: glass RPCs.

LHCb: RICH, VELO.

ATLAS: ITK (pixel & strips), Forward protons, BCM, Tilecal.

CERN R&D: RD42(Diamond), RD51(MGPDs), RD52(calorimetry).

ToTem: Timing detectors.

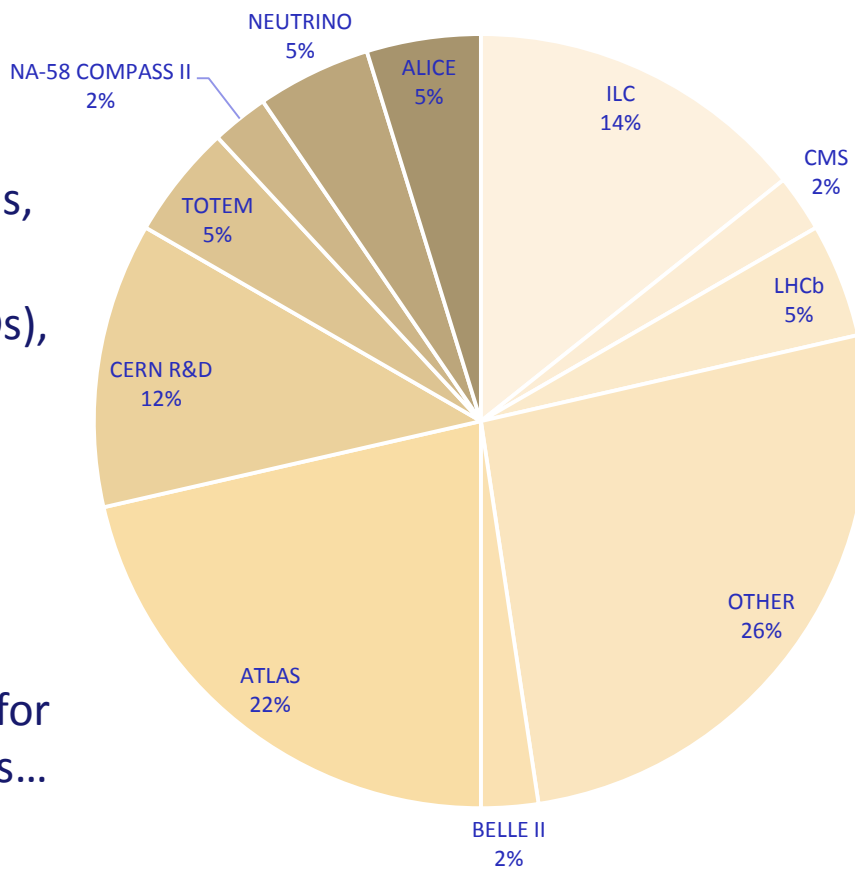
COMPASS: E-cal.

Neutrino: SCNETT , baby-MIND.

BELLE II: vertex detector.

OTHER: Various R&D for calorimeters (also for satellites), trackers, collimation with crystals...

Number of users by communities

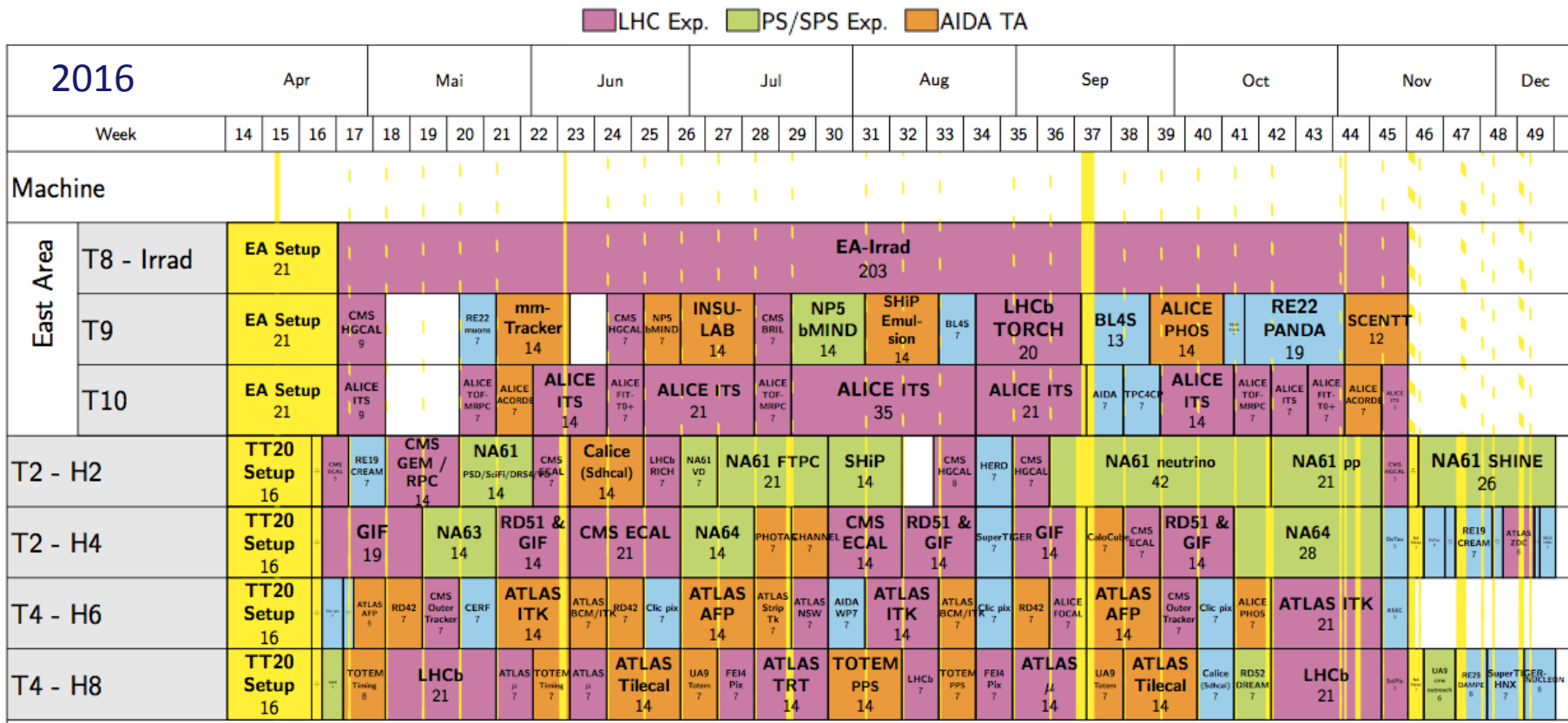




■ LHC Exp. 
 ■ PS/SPS Exp. 
 ■ Other Exp. 
 ■ AIDA TA

2015		Apr			Mai			Jun			Jul			Aug			Sep			Oct			Nov			Dec									
Week		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
Machine																																			
East Area	T9			EA Setup 10	RE22 PANDA 19	Calice (Sdhal) 8						RE22 PANDA 16				INSU-LAB 14					SHIP CALO 9	BL4S 12	SHIP Emulsion 16	ALICE FOCAL 7	SHIP Muon 14	LHCb TORCH 19									
	T10			EA Setup 7	ALICE ITS 16	ALICE ACORDE 7	ALICE ITS 7	ALICE FIT-MGEM-V0+ 7	ALICE ITS 14	NA58 ECAL 14	ALICE ITS 7			ALICE ITS / RD50 Fast Si 7	ALICE ITS 8							ALICE ITS 7	ALICE ITS 9	ALICE AD 7	ALICE ITS 7	ALICE FIT-MGEM-V0+ 7	ALICE ITS 7	ALICE TOF-MRPC 7	ALICE PHOS 14	ALICE ITS 5					
T2 - H2				NA Setup 7	Medipix 7	NA61 SciFi 7	ATLAS ZDC 14		CMS GRPC 6	RE29 DAMPE 21	CMS ECAL 7	Calice (Ahal) 14	SHIP ECAL 7	CMS HCAL Upgrade phase2 14	CMS HE Upgrade phase1 14	CREAM 7	NUCLEON 7	NA61 SHINE 42				Calice (Sdhal) 13	CMS HGCAL 13	NA61 SHINE 15											
T2 - H4				NA Setup 4	NA63 16	CMS ECAL 14	RD51 (+GIF) 5	RD51 (+GIF) 11	CMS ECAL 7	GIF 7	RD51 (+GIF) 14	GIF 7	RE22 PANDA MVD (+GIF) 7	LHCf 14	CaloCube 7	GIF 14	PHOTACHANNEL 7	CHANN 7	CMS EL EB upgrade 7	P348 14	CMS EE upgrade 14	RD51 (+GIF) 14	NA58 ECAL 7	HERD 9	NUCLEON 5	RE21 Cbm 6									
T4 - H6				NA Setup 4	Calice (Sdhal) 16	Clic pix 7	CERF 7	Clic pix 5	RE20 BELLE II 11	CMS Outer Tracker 7	ATLAS ITK 9	ATLAS Pixel 12	ATLAS ADE-pix 7	TOTEM 7	RD42 7	Clic pix 7	Calice (Ahal) 15	Clic pix 13	ATLAS ITK 7	ATLAS AFP/ITK 14	CERF 7	RD42 7	Clic pix 7	ALICE FOCAL 14	CMS Outer Tracker 12										
T4 - H8				NA Setup 4	UA9 16	LHCb 13	ATLAS TRT 6	UA9 6	TOTEM 5	LHCb 9	ATLAS ADE-pix 5	ATLAS NSW 7	LHCb 21	SoiPix 7	TOTEM 7	Gva Pix 7	GridPix 7	Gva Pix 12	CaloCube 7	TOTEM 9	LHCb 14	ATLAS Tilecal 14	RD52 DREAM 12	LHCb 14	UA9 4	RE29 DAMPL 5	RE25 CALET 6	Support 7	TIGER 7						

In 2015 we received 24 submissions, all were selected, 136 users benefited from the CERN TA program.



In 2016 we received 18 submissions, 62 user stays supported through the CERN TA program.





TA Project Acronym	Publication Year	Authors	Title	References	Publication type	Peer reviewed	DOI	Open Access
AIDA-2020-CERN-TB-2015-04	2016	A. Berra et al.	Longitudinally segmented shashlik calorimeters with SiPM readout	NIM A	Journal publication	yes	10.1016/j.nima.2016.04.025	no
AIDA-2020-CERN-TB-2015-04	2016	A. Berra et al.	A compact light readout system for longitudinally segmented shashlik calorimeters	NIM A	Journal publication	yes	10.1016/j.nima.2016.05.123	no
AIDA-2020-CERN-TB-2015-05	2016	R. Thalmeier et al.	EMC studies for the vertex detector of the BELLE-II experiment	JINST 11 C01044	Conference proceeding	yes	10.1088/1748-0221/11/01/C01044	no
AIDA-2020-CERN-TB-2015-05	2016	C. Irmiler et al.	Construction and test of the first BELLE-II SVD ladder implementing the origami chip-on-sensor design	JINST 11 C01087	Conference proceeding	yes	10.1088/1748-0221/11/01/C01087	no
AIDA-2020-CERN-TB-2015-05	2015	B. Würkner	Beam test data analysis and resolution studies for the Silicon Vertex Detector	TU Wien	Diploma thesis	N/A	N/A	yes
AIDA-2020-CERN-TB-2015-05	2016	K. Adamczyk, et al.,	The BELLE-II SVD assembly and mechanics	NIM A	Conference proceeding	yes	10.1016/j.nima.2016.03.100	no
AIDA-2020-CERN-TB-2015-07	2016	S. Terzo, on behalf of the RD50 Collaboration	Radiation Hard Silicon Particle Detectors for HL-LHC - RD50 Status Report	NIM A	Journal publication	yes	10.1016/j.nima.2016.05.035	no
AIDA-2020-CERN-TB-2015-07	2015	M. Bomben et al.	Performance of Edgeless Silicon Pixel Sensors on p-type substrate for the ATLAS High-Luminosity Upgrade	IEEE	Journal publication	no	<a href="https://arxiv.org/pdf/1609.02128.pdf">https://arxiv.org/pdf/1609.02128.pdf</a>	Yes
AIDA-2020-CERN-TB-2015-07	2015	M. Bomben et al.	Performance of Edgeless Silicon Pixel Sensors on p-type substrate for the ATLAS High-Luminosity Upgrade	N/A	Presentation	No	N/A	Yes
AIDA-2020-CERN-TB-2015-10	2015	M. Berretti	The timing upgrade project of the TOTEM Roman Pots detectors	NIM A	Journal publication	yes	10.1016/j.nima.2015.09.112	Yes



AIDA-2020-CERN-TB-2015-10	2016	M. Berretti	The diamond time of flight detector of the TOTEM experiment	NIM A	Journal publication	yes	10.1016/j.nima.2016.04.068	no
AIDA-2020-CERN-TB-2015-11 & 22	2016	E.Vannuccini for the CaloCube Collaboration	CaloCube: a new-concept calorimeter for the detection of high-energy cosmic rays in space	NIM A	Conference proceeding	yes	10.1016/j.nima.2016.07.014	no
AIDA-2020-CERN-TB-2015-15	2016	A. Gorisek et al.	The edge transient current technique(E-TCT) with high energy hadron beam	NIM A	Journal publication	yes	10.1016/j.nima.2016.03.061	yes
AIDA-2020-CERN-TB-2015-15	2015	M. Dunser et al.	Test Beam Results of a 3D Diamond Detector	PoS-(EPS-HEP 2015) 288	Conference proceeding	yes	N/A	yes
AIDA-2020-CERN-TB-2015-15	2015	G. Kasieczka et al.	RD42: Radiation hard diamond sensor	PoS (Vertex 2015) 033	Conference proceeding	yes	N/A	yes
AIDA-2020-CERN-TB-2015-16	2015	A. Cardini et al.	The small-angle performance of a dual-readout fiber calorimeter	NIM A808 (2015) 41-53	Journal publication	yes	10.1016/j.nima.2015.11.005	no
AIDA-2020-CERN-TB-2015-16	2016	R. Wigmans	New results from the RD52 project	NIM A824 (2016) 721-725	Journal publication	yes	10.1016/j.nima.2015.09.069	no
AIDA-2020-CERN-TB-2016-01	2016	E. Bagli et al.	Experimental evidence of independence of nuclear de-channeling length on the particle charge sign	European Physical Journal C	Journal publication	No	N/A	Yes
AIDA-2020-CERN-TB-2016-02	2016	A. Berra et al.	Longitudinally Segmented Shashlik Calorimeters with SiPM Readout: the SCENTT Experiment		Presentation	No	N/A	Yes



AIDA-2020-CERN-TB-2016-02	2016	A. Berra et al.	Longitudinally Segmented Shashlik Calorimeters with SiPM Readout: the SCENTT Experiment	IEEE, NSS	Journal publication	yes	10.1016/j.nima.2016.04.025	no
AIDA-2020-CERN-TB-2016-03	2016	L.Pasqualini	A tracking detector to study O(1 GeV) n_m CC interactions, 14th Topical Seminar on Innovative Particle and Radiation Detector		Presentation	no	N/A	yes
AIDA-2020-CERN-TB-2016-08	2016	Andrew Blue on behalf of the ATLAS Collaboration	Testbeam Results from Pre and Post Irradiated Modules for the Upgrade of the ATLAS Strip Tracking Detector		Poster	no	N/A	yes
AIDA-2020-CERN-TB-2016-08	2016	Susanne Kuehn on behalf of the ATLAS Collaboration	First testbeam results of prototype modules for the upgrade of the ATLAS strip tracking detector		Presentation	no	N/A	yes
AIDA-2020-CERN-TB-2016-10	2016	A. Macchiolo et al.	Development of n-in-p pixel modules for the ATLAS upgrade at HL-LHC	NIM A	Proceedings	Yes	10.1016/j.nima.2016.03.081	no
AIDA-2020-CERN-TB-2016-14	2016	J. Lange et al.	Beam tests of an integrated prototype of the ATLAS Forward Proton detector	JINST	Journal publication	Yes	10.1088/1748-0221/11/09/P09005	yes
AIDA-2020-CERN-TB-2016-15	2016	Andrej Gorišek et al.	The edge transient-current technique (E-TCT) with high energy hadron beam	NIM A	Journal publication	yes	10.1016/j.nima.2016.03.061	yes
AIDA-2020-CERN-TB-2016-18	2016	E.Vannuccini for the CaloCube Collaboration	CaloCube: a new-concept calorimeter for the detection of high-energy cosmic rays in space	NIM A	Conference proceeding	yes	10.1016/j.nima.2016.07.014	no