



Funded by the European Union
Grant Agreement N° 777431



XLS 1st Annual Project Meeting

Barcelona, December 10-12, 2018

<https://indico.cells.es/indico/event/177>



Welcome

1st XLS Annual Meeting

December 10th, 2018



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Welcome Francis Perez





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Compact 

Program

<https://indico.cells.es/indico/event/177/material/1/0.pdf>

<https://indico.cern.ch/event/779185/timetable/>

Monday, 10 December 2018				
14:00	14:15		Welcome	Francis Perez (ALBA-CELLS)
14:15	14:45		XLS Status	
WP2 Activity Report and Discussion				
14:45	16:00	10'	Introduction	
		20'	CompactLight User Meeting	
		10'	The process of selecting solutions in the year ahead	
		10'	Planning for the CDR	
		25'	Discussion	
Coffee Break				
WP4 Activity Report and Discussion				
16:30	17:45	5'	Introduction	
		15'	Update on the X-band linac	
		15'	Integration: component layout	
		15'	36 GHz linearizing structure network, initial study	
		15'	Update on the 36 and 4	
10'	Discussion			

Tuesday, 11 December 2018 - Morning Session				
WP3 Activity Report and Discussion				
09:00	10:15	10'	Introduction	
		10'	Progress towards a C-band injector	
		10'	X-Band velocity bunching and line	
		10'	Magnetic compressor design stud	
		10'	K-band RF linearizer design	
		10'	A possible linearizer at 35.982 GHz	
15'	Discussion			
WP5 Activity Report and Discussion				
10:15	10:55	10'	Overview of WPS	
		10'	Undulators Cost Matrix	
		10'	PM Undulators	
		10'	SC Undulators	
Coffee Break & Meeting				
11:25	12:00	10'	Microwave Undulators	
		10'	Undulators for soft X-rays scheme	
		10'	Study of wakefields in undulators	
		5'	Discussion	

Tuesday, 11 December 2018 - Afternoon Session				
WP6 Activity Report and Discussion				
12:00	13:15	10'	Introduction	
		15'	Beam dynamics studies for the photoinjector with and without bunching	
		15'	S-band based linac option status modelling for FELs	
		10'	X-band based linac option and optimization tool	
		15'	3-D simulation for the S-band option of CompactLight	
		10'	Discussion	
Lunch				
14:15	14:45	30'	Discussion on parameters list	
Partner Activity I				
14:45	16:30	10'	Short overview of Australian ac	
		10'	Short overview of SINAP activities	
		10'	Short overview of TU/e group a	
		10'	Short overview of CSIC group a	
		10'	Laser & photocathode study fo	
		10'	S-band RF guns	
		10'	Dechirping structures	
		30'	Compact FEL devices: the quest design concepts	
5'	Discussion			
SAC Session				
14:45	16:30	90'	SAC Internal Discussion (Parallel)	
Coffee Break				
17:00	18:00	60'	XLS-SAC Joint Session	
20:00 - 22:30 Dinner at Arenal Restaurant - Buss				

Wednesday, 12 December 2018				
WP7 Activity Report and Discussion				
09:00	09:30	5'	Introduction	Regina Rochow (ST)
		5'	Task 7.1 & 7.2	Regina Rochow (ST)
		10'	Cost analysis	Evangelos Gazis (IASA)
		5'	Technology transfer	Evangelos Gazis (IASA)
		5'	Discussion	All
WP1 Activity Report and Discussion				
09:30	10:00	15'	Recent and next WP1 activities	Regina Rochow (ST)
		10'	Project Communication	Andrea Latina (CERN)
		5'	Discussion	All
General Discussion				
10:00	11:00		- Six months ahead activity plans - Deliverables - Next meeting ...	All
Coffee Break				
11:30	12:30		Collaboration Board Meeting	CB Members
Lunch				
14:00	16:00		Guided Tour of the ALBA Synchrotron	
16:00	17:30		Time for potential WP or Working Group Meetings	



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Coffee Breaks



**Outside
“Lluís Vives” room
(workshop meeting room)**

Lunches



**“Martí Franques” room
(downstairs)**



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Group Photo

TUESDAY, 11th December
10:55
(just before the coffee)





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WIFI

WIFI:

Password:

Hotel Campus UAB

Campus2016\$UAB





Today (Monday) evening

Free

(suggestion to go to BCN or Sant Cugat by train)

- Bellaterra FGC railway station (S2 or S6 lines, trains every ~5-10min)
- The journey to Barcelona Plaça Catalunya takes ~33 minutes
- The journey to Sant Cugat takes ~7 minutes
- The Exe Campus hotel is 500m away from the Bellaterra railway station





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Tomorrow (Tuesday) evening

Dinner in Barcelona

Restaurant Arenal

<http://gruparenal.com/en/restaurants/arenal/>



20h00 (sharp!):

Bus from Hotel Exe Campus

20h30: Dinner

23h00: Bus from Restaurant to Hotel



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ALBA Visit

Wednesday, 12th at 14:00



14h00: Bus from Hotel Exe Campus

14h15: Visit

16h00: Taxis to Airport or to Hotel
(contact Daimí)





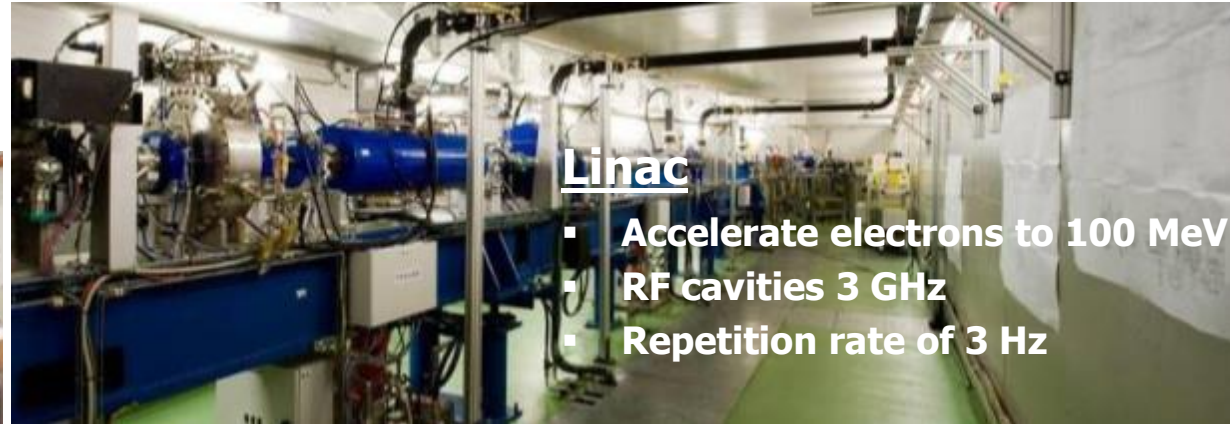
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ALBA

- **3 GeV electron accelerator complex**
- **8 beam lines in operation and 4 in construction**
- **Funding is 50% Spanish – 50% Catalan Governments**
- **Approved in 2003**
- **In operation since 2012**





Linac

- Accelerate electrons to 100 MeV
- RF cavities 3 GHz
- Repetition rate of 3 Hz

Booster

- Accelerate e⁻ from 100 MeV to 3 GeV
- 1 x RF cavity at 500 MHz
- Repetition rate of 3 Hz

Storage Ring

- Keep electrons at 3.0 GeV
- Magnets and correctors to keep the orbit (sub- μ m)
- Vacuum Pumps (10^{-10} mbar)
- 6 x RF cavities at 500 MHz
- Circulating current: 250 mA



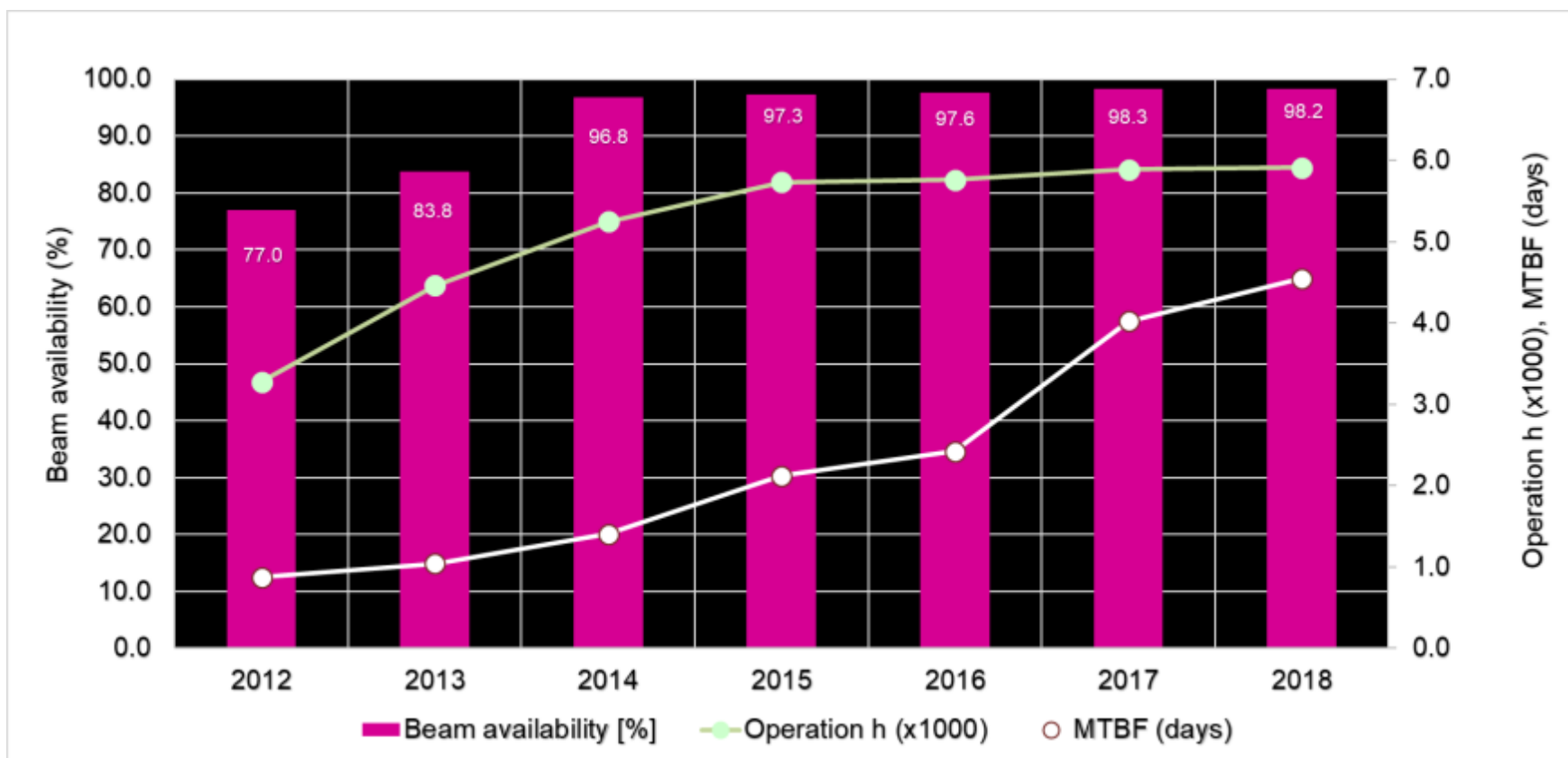


Accelerators Operation

Operating about 6000h/year

Beam availability > 98%

Mean Time Between Failures > 100h (> 4days)

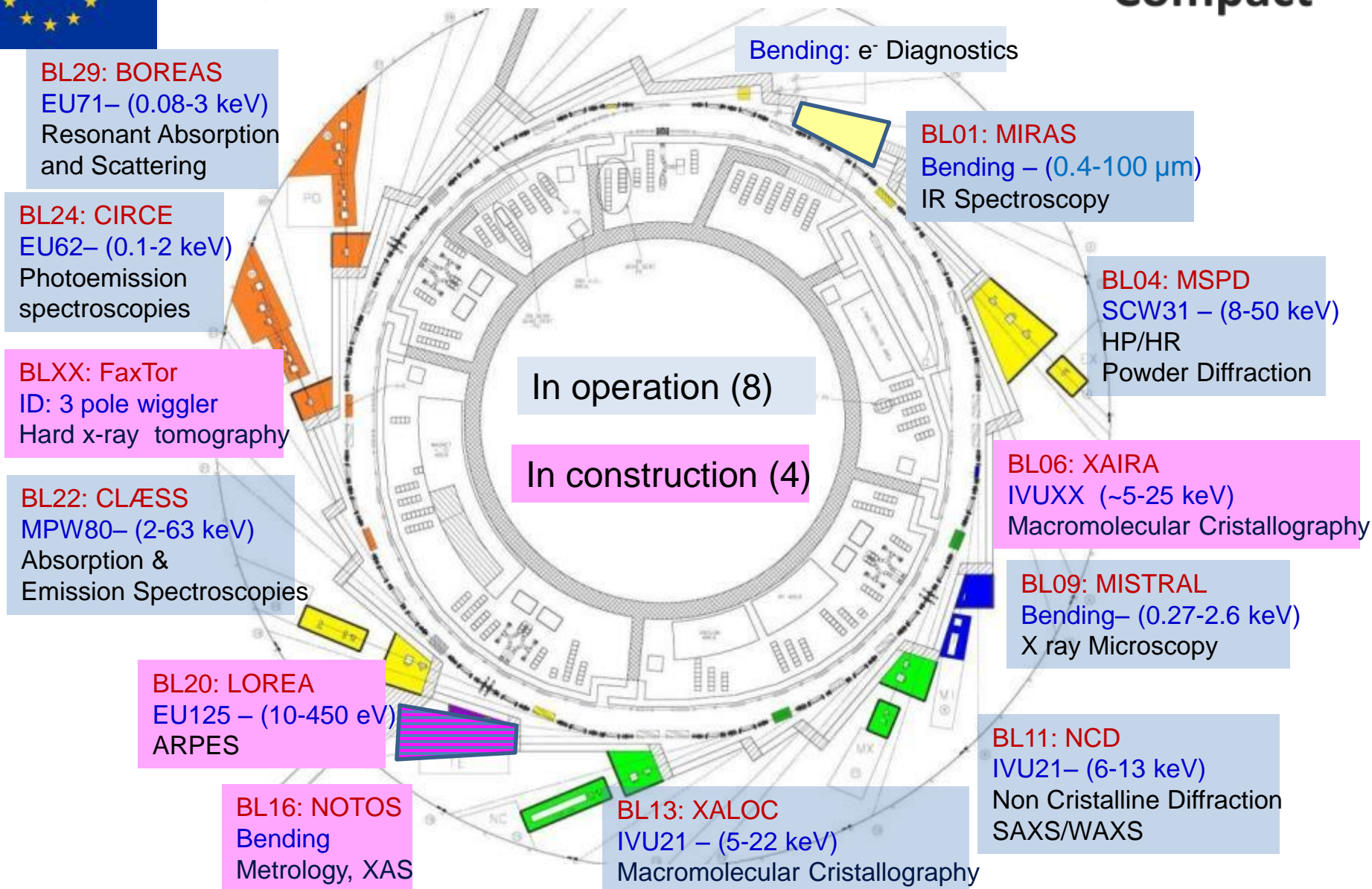




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Beamlines

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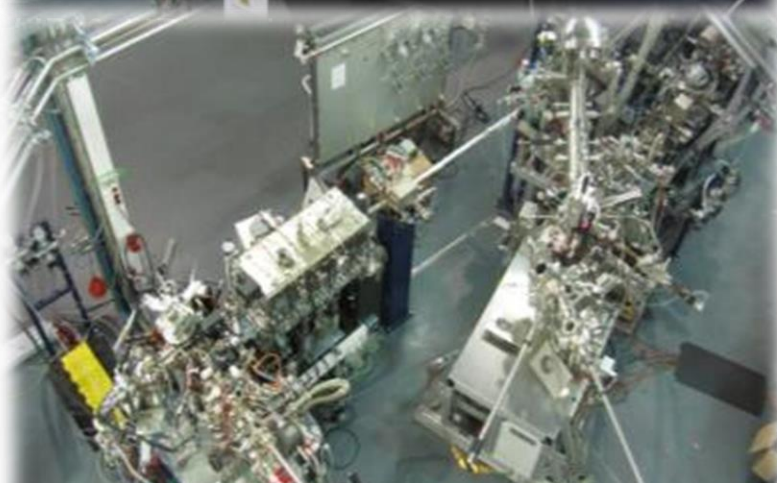
Condensed Matter, Chemistry



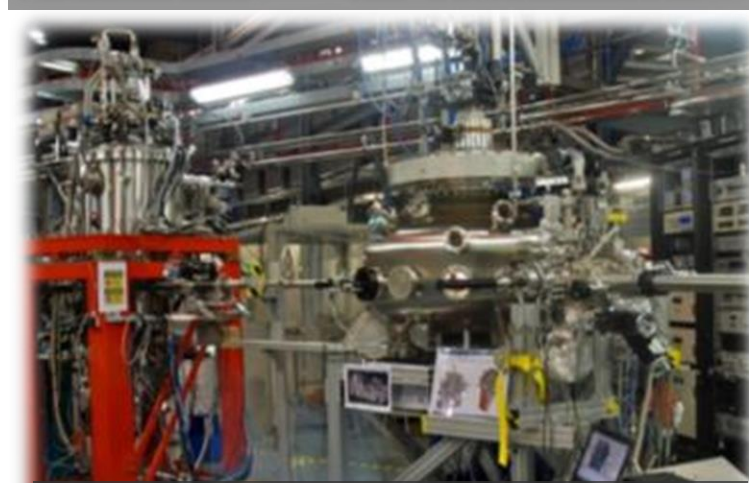
MSPD: Material Science Powder
Diffraction



CLAESS:
Absorption & Emission Spectroscopies



CIRCE: PhotoEmission Electron Microscopy &
Near Ambient Pressure Photoemission



BOREAS Resonant Absorption
and Scattering



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Life Sciences

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**NCD – SWEET, Non crystalline diffraction,
SAXS and WAXS**



**XALOC,
Macromolecular Crystallography**



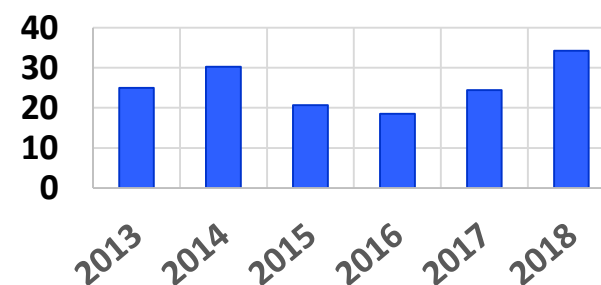
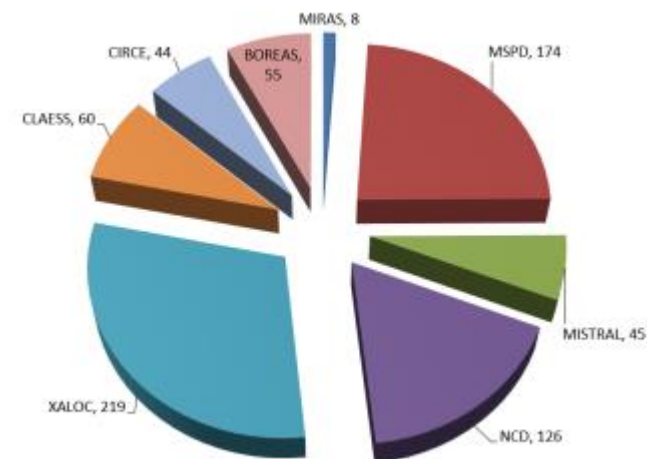
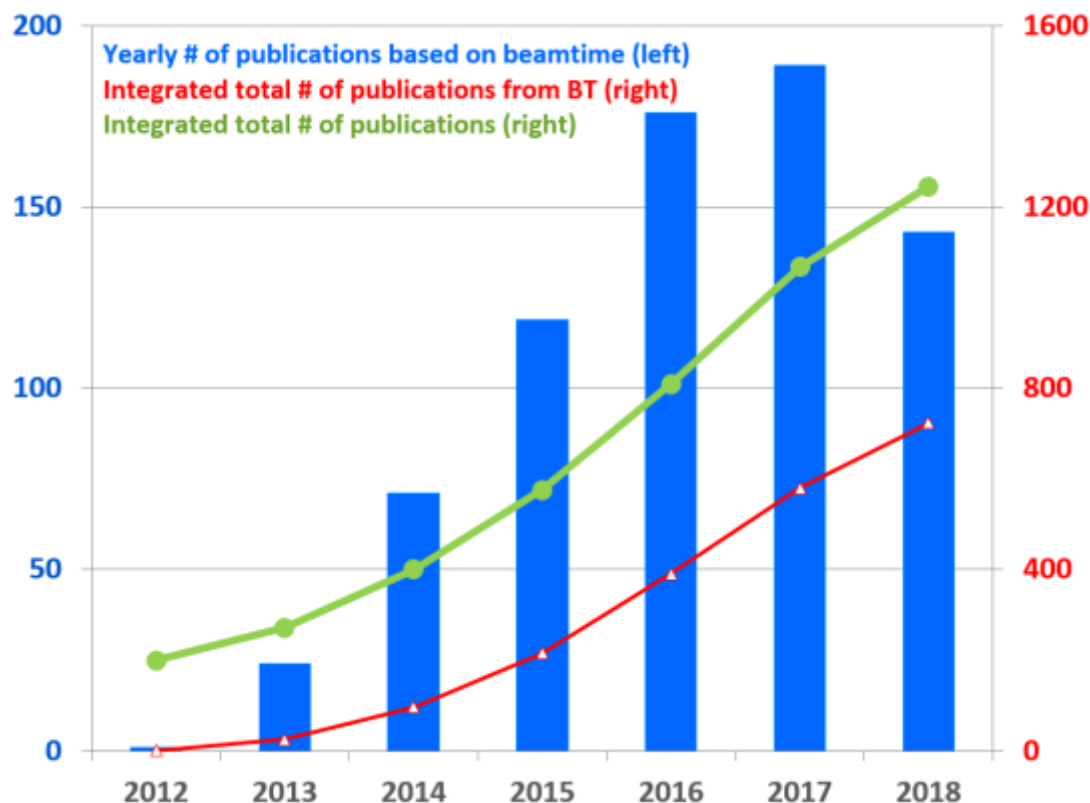
MISTRAL, Cryo nano-tomography



MIRAS, IR spectroscopy



Scientific productivity



% of publications with IF > 7



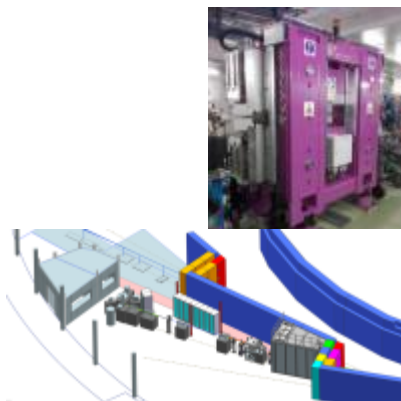
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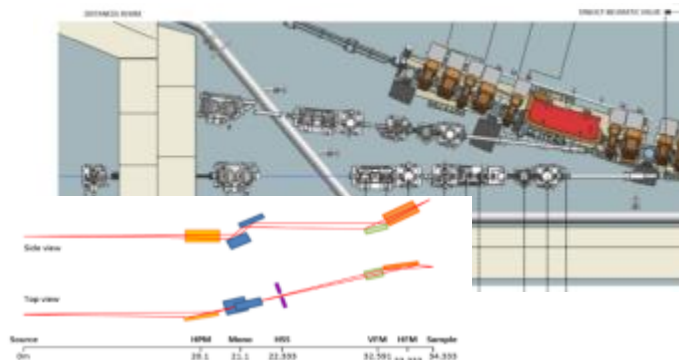
4 Beamlines under construction

LOREA, Angle resolved photoemission

Electronic structures,
Materials science,
0.01-1 keV



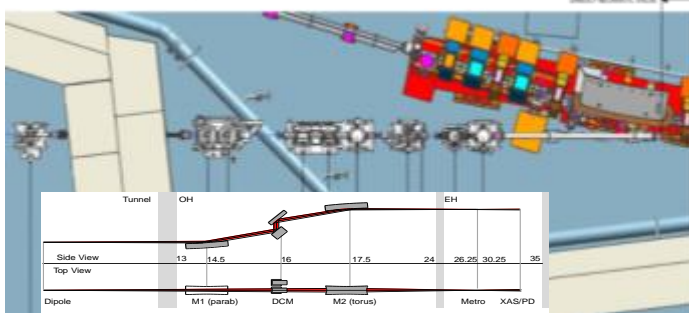
XAIRA, Microfocus Macromolecular
Crystallography



Biosciences, Proteins,
drugs, 4 to 22 keV

FE16 DISTANCES

(from 1' of the center of the bending magnet to the center of chambers or masks)



Material science,
catalysis,
instrumentation,
metrology,, 4.8 to 30 keV

NOTOS, HP, Absorption and
Instrumentation Development



Fast X-ray radiography,
real time tomography
hard X-ray range

FAXTOR, Hard X-ray Tomography)



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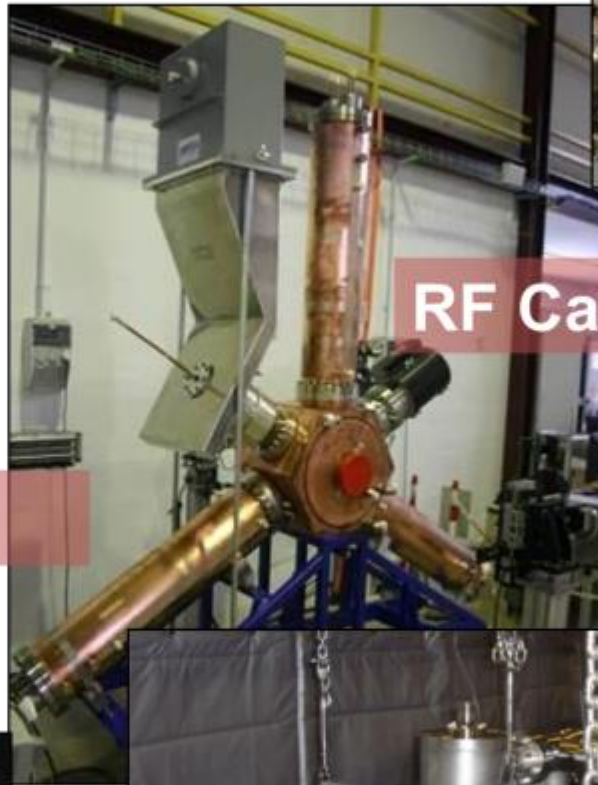
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ALBA R&D in Accelerators

Magnets



Diagnostics



RF Cavities

Timing

**Digital
Electronics**



**Control
System**



Vacuum



R&D labs

- Magnetic lab
- RF lab
- Vacuum lab



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Magnetic Measurements Lab

Specialized in **accurate** measurements of **big** magnetic structures

Mission of the laboratory:

1. Measurement of Accelerators Magnets
2. Construction and measurement of IDs



Rotating coil bench
Fixed stretched wire bench
Helmholtz coils
Hall probe bench
Flipping coil bench





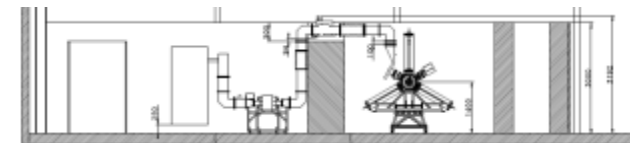
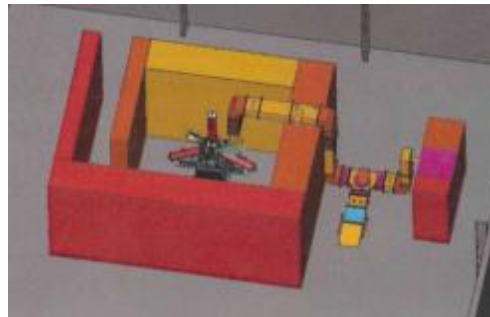
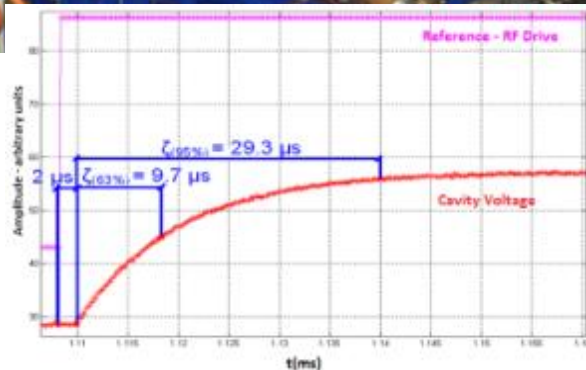
High Power RF Lab

Specialized in low and high RF power measurements and cavity conditioning



In order to build the accelerators, ALBA set up a complete high power RF laboratory for prototype testing and cavity conditioning:

1. LLRF tests
2. Controls tests
3. 80 kW amplifier IOTs tests
4. High power RF conditioning of:
 - Cavities
 - Input power couplers





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Ultra High Vacuum Lab

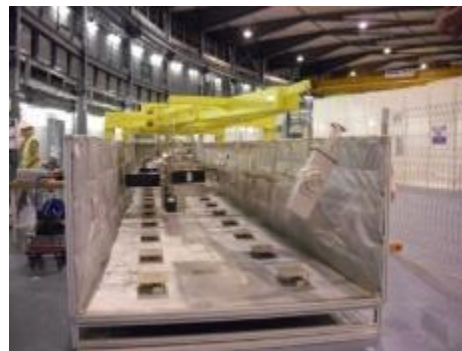
Specialized in **Ultra High Vacuum: design, construction and tests**



Clean room class 100000 (ISO 8)



1 T travelling crane



Bake-out oven, 14m long



ANSYS, NX, Molflow



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International Collaborations

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H2020 - XLS

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FCC-CERN – HTS-BS-FCC

→ Develop beam screens based on HTS



HTS Coated Conductors for FCC
beam screen

HTSCC-Beam Screen Proposal



H2020 - Project EuroCirCol

→ Design FCC VC chamber



Collaboration with CLIC-CERN



H2020 - ARIES – ADA

→ Fast Feed Back Workshop hosted by ALBA, 12 -14 Nov 2018



ESRF - EBS – BPM tool



SIRIUS & DIAMOND - Digital LLRF



Brasilia Synchrotron
Light Laboratory



H2020 – BEATS (SESAME)

Build a beamline at SESAME, design and build ID&FE

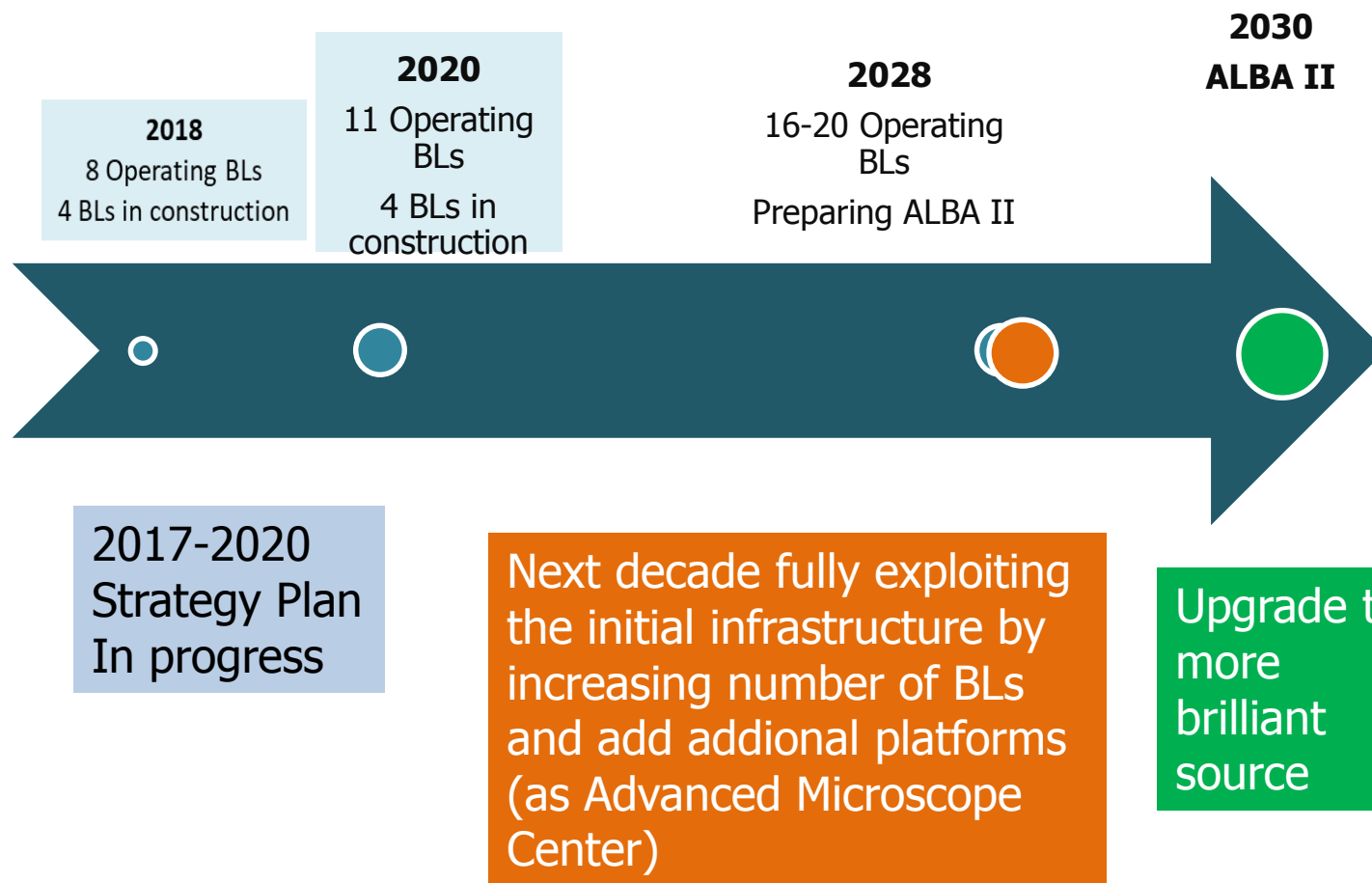




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ALBA in the future





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Enjoy the meeting



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