

JCNS 2030



WHAT HAPPENS AT THE ILL?

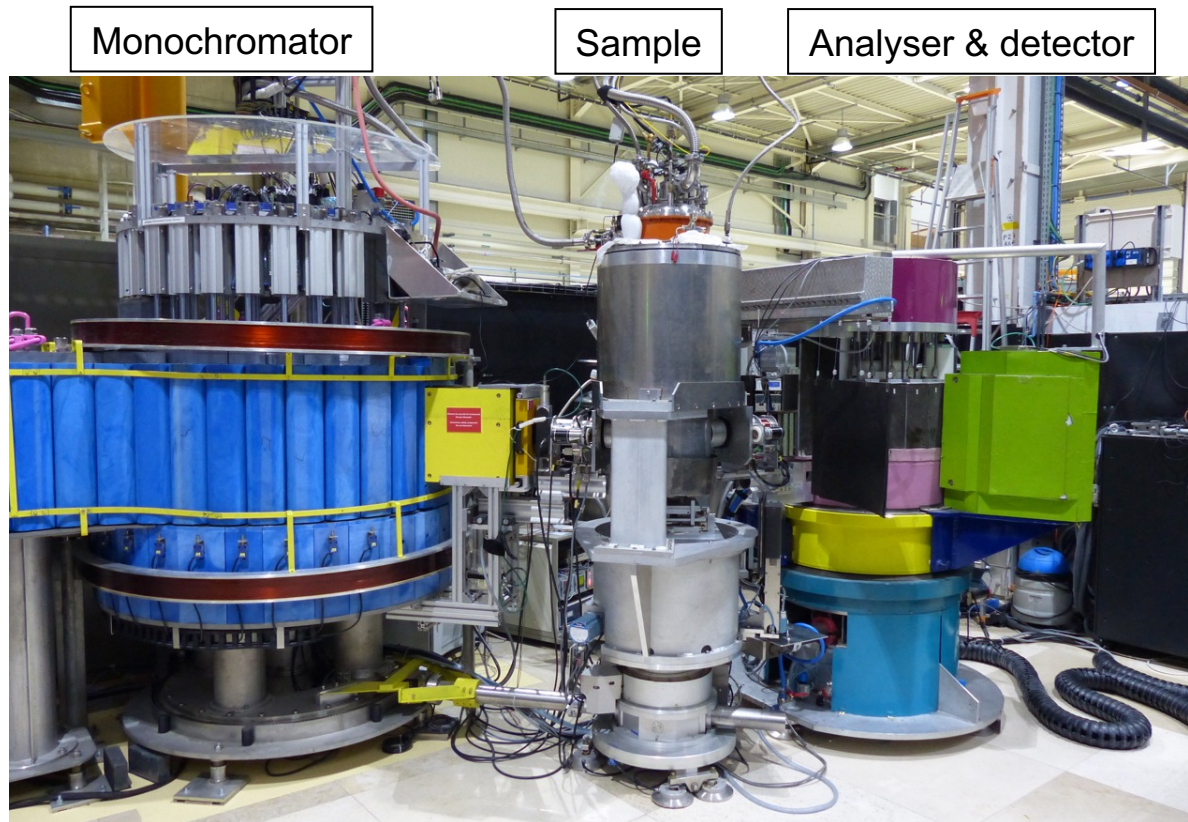
Karin Schmalzl

03.03.2022

Outstation at the ILL, Grenoble

The cold three-axis spectrometer IN12

Guide hall ILL7



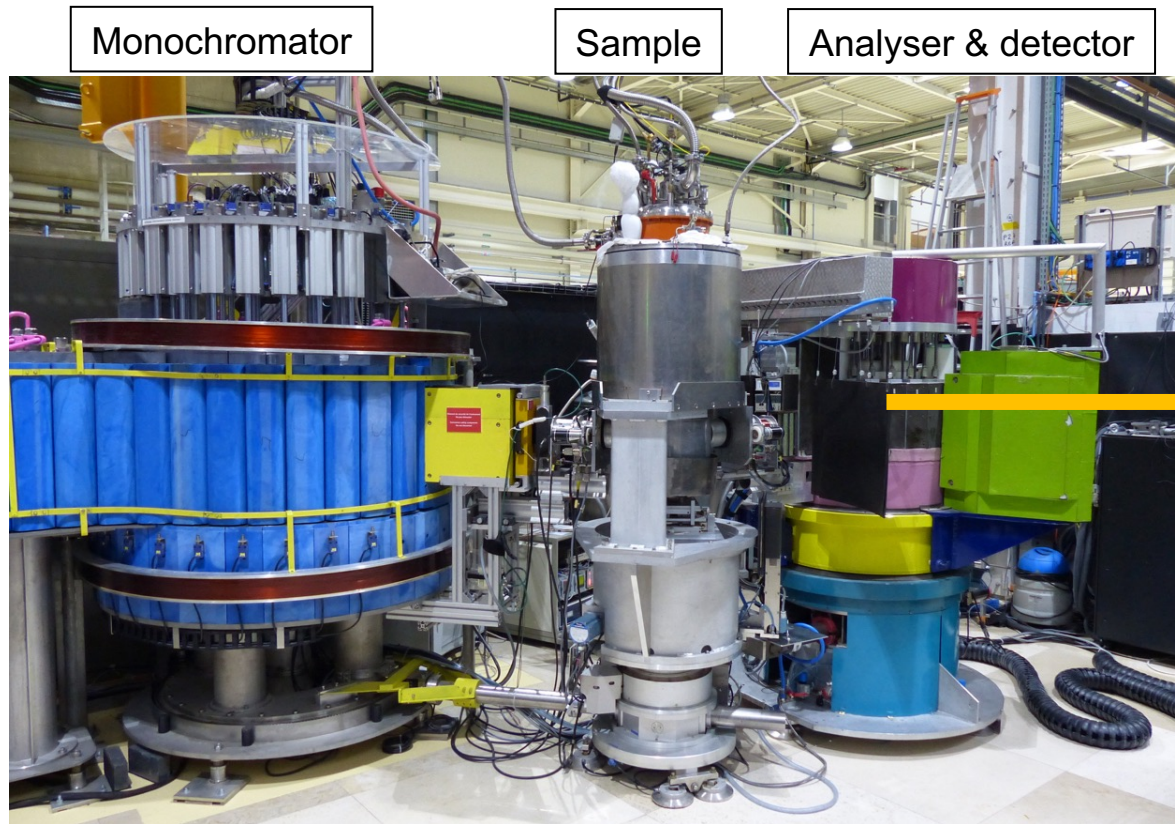
Operated in collaboration with the CEA Grenoble

- access to the CEA instruments
- IN22 (thermal three-axis spectrometer)
- D23 (thermal diffractometer)

Outstation at the ILL, Grenoble

The cold three-axis spectrometer IN12

Guide hall ILL7



Maintenance & modernization programme

for safe operation until 2033



Key Reactor Components (KRC)

Ten-year safety check “GP”(>150 tasks)

Central chimney reactor

Exchange of H1H2 beam tube

Maintenance cold source

Reinforcement of physical protection

and good performance



Endurance programme



Modernization of instruments and
support infrastructure (e.g., sample environment,
data software)

Maintenance & modernization for safe operation 2033



Key Reactor Components (KRC)

Reinforcement of physical protection:

ZAC is already in-place:

Fence with controlled access points



Maintenance & modernization for safe operation 2033



Key Reactor Components (KRC)

Reinforcement of physical protection:

ZAC is already in-place:

Fence with controlled access points

Soon: additional controls and **reinforced protection**
for reactor level C and D !



Endurance programme

For modern instrumentation and support infrastructure



After the Millennium programme for instrument modernization,
phase 1 (M0) 2000-2008 and
phase 2 (M1) 2009-2018

Endurance programme 2016-2023

phase 1 2016-2021

phase 2 2019-2023

Endurance phase 1: 2016-2021

Project	Description	
FIPPS	Fission product γ -ray spectrometer	✓
RAINBOWS	White beam reflectometer	✓
D17	Guide & chopper upgrade	✓
IN5	Guide and beam focussing optics	✓
PANTHER	Thermal neutron spectrometer	✓
SUPERSUN	Ultra-cold neutron source	✓
D3 Liquids	Wide-angle detector, polarization analysis	✓
IN20	Velocity selector	✓
H1H2	Beam tube renewal	2020-2022
H24 (D10,IN13,XtremeD)	Thermal neutron guide renewal, planning	2020 2021-2022
NESSE	Future sample environment	2016-2023
BASTILLE	Data treatment software	2016-2023

Endurance phase 2: 2019-2023

Project	Description
D11	Large area detector, collimation
D22	Wide angle detector
D16	Wide angle detector
D20	Detector
IN20	Monochromator, multianalyser
LADI-B	2nd protein crystallography station
NEXT	Imaging beam line
FIPPS	Mass spectrometer
D19	High count rate detector
RAINBOWS	Implementation on D17/FIGARO
WASP	Extra detector & TOF option
IN16B	High Q Si311 analysers
MARMOT	Multiplexing for Thales

Endurance phase 2: 2019-2023

Project	Description
NESSE	Sample environment
BASTILLE	Data treatment software
H24 (D10,IN13,XtremeD,CT2, Cyclops)	Thermal neutron guide, Instruments
H15 (D7,D11,Sharp,SAM)	Guide renewal, instruments

Various high pressure sticks & cells (also with PSI),
High field magnets > 25T (also with Toulouse, LENS)

Improvement of data analysis tools,
of instrument control Visa,
and simulation of experiments

Endurance phase 2: 2019-2023

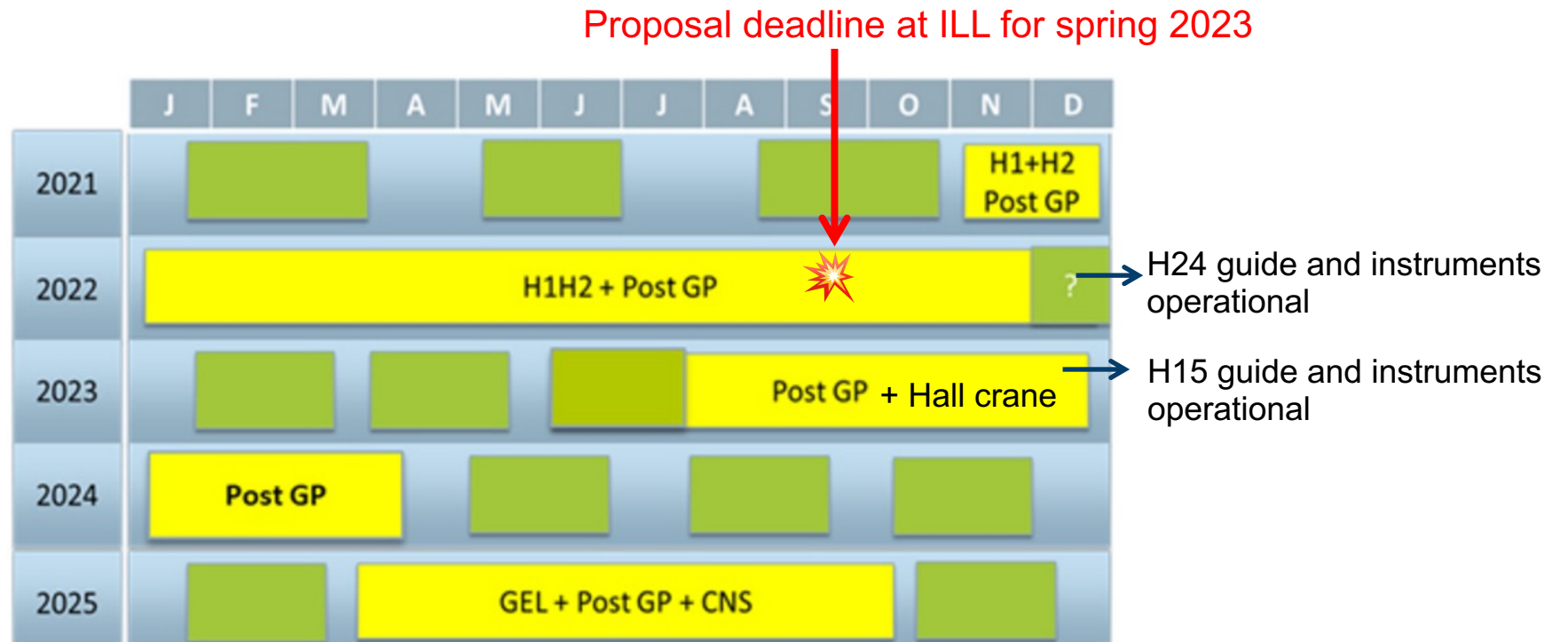
Project	Description
NESSE	Sample environment
BASTILLE	Data treatment software
H24 (D10,IN13,XtremeD,CT2, Cyclops)	Thermal neutron guide, Instruments →
H15 (D7,D11,Sharp,SAM)	Guide renewal, instruments →

Instruments stopped October 2021

Instruments operational
end 2022
and end 2023


CRG instruments LLB

Planned reactor cycles



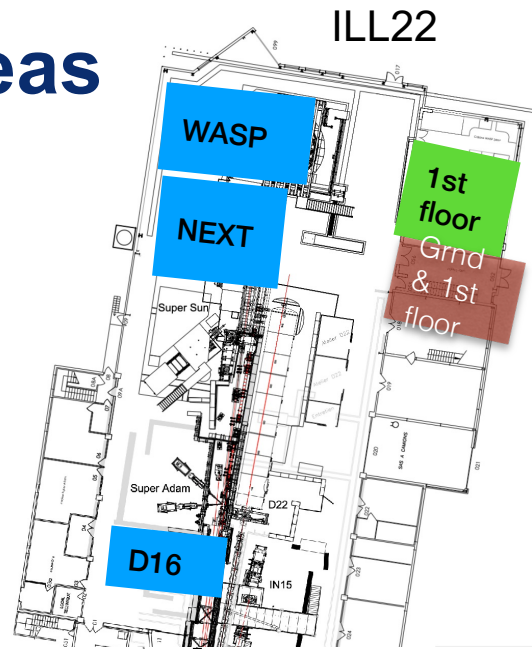
2026+x: minimum 3-4 reactor cycles per year

Focus on science

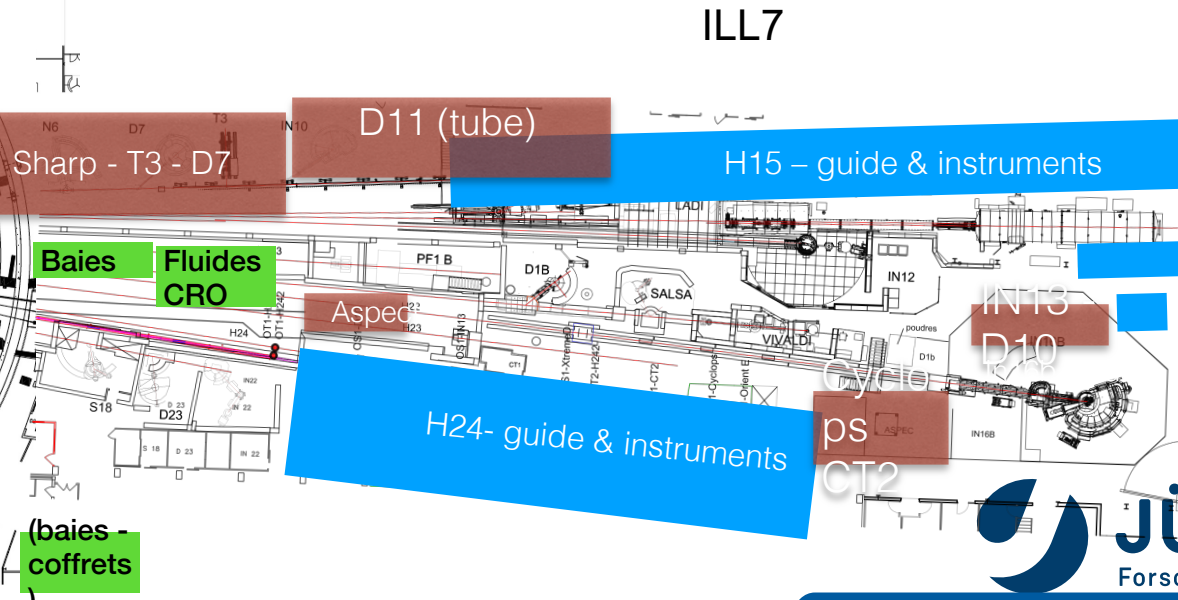
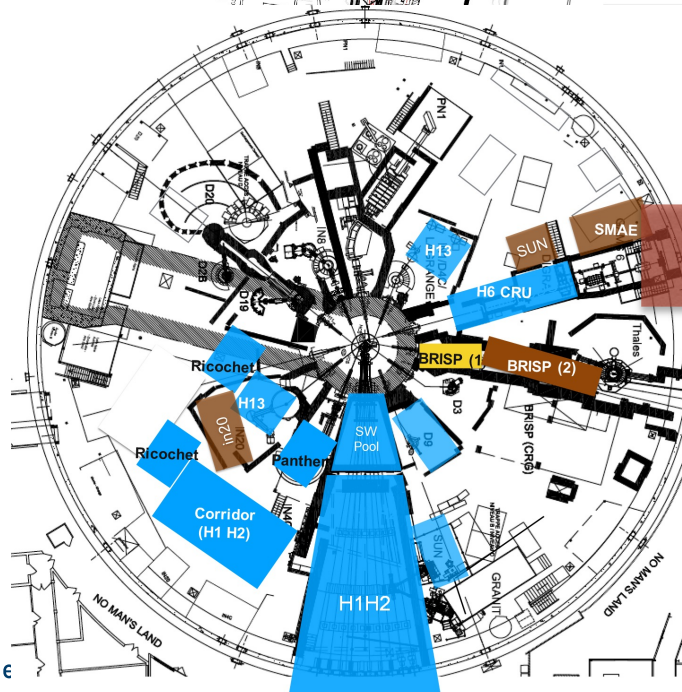
Main work areas

October 2021-

December 2022

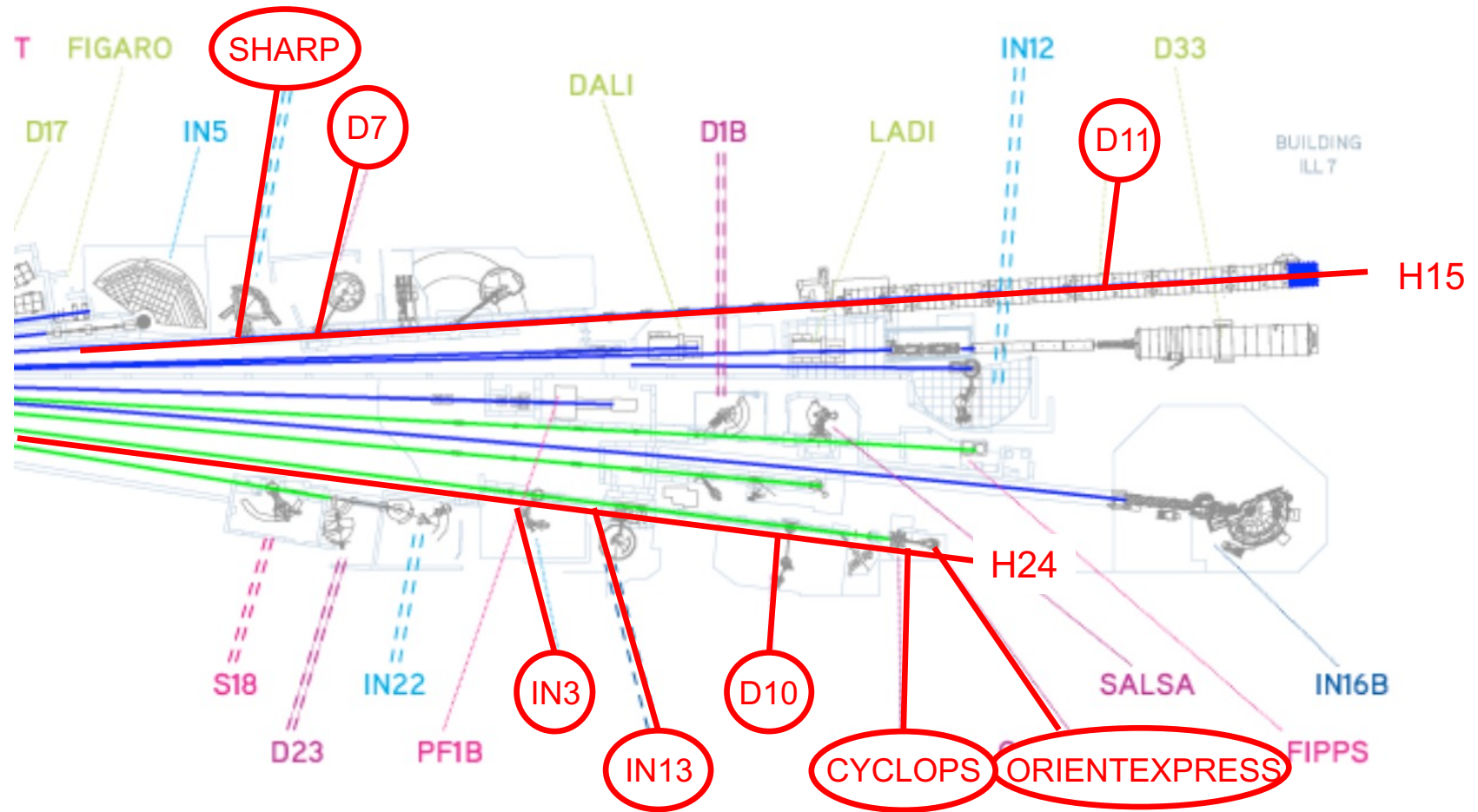


- Work areas
- Storage (instr. Comp.)
- Storage (electronics)



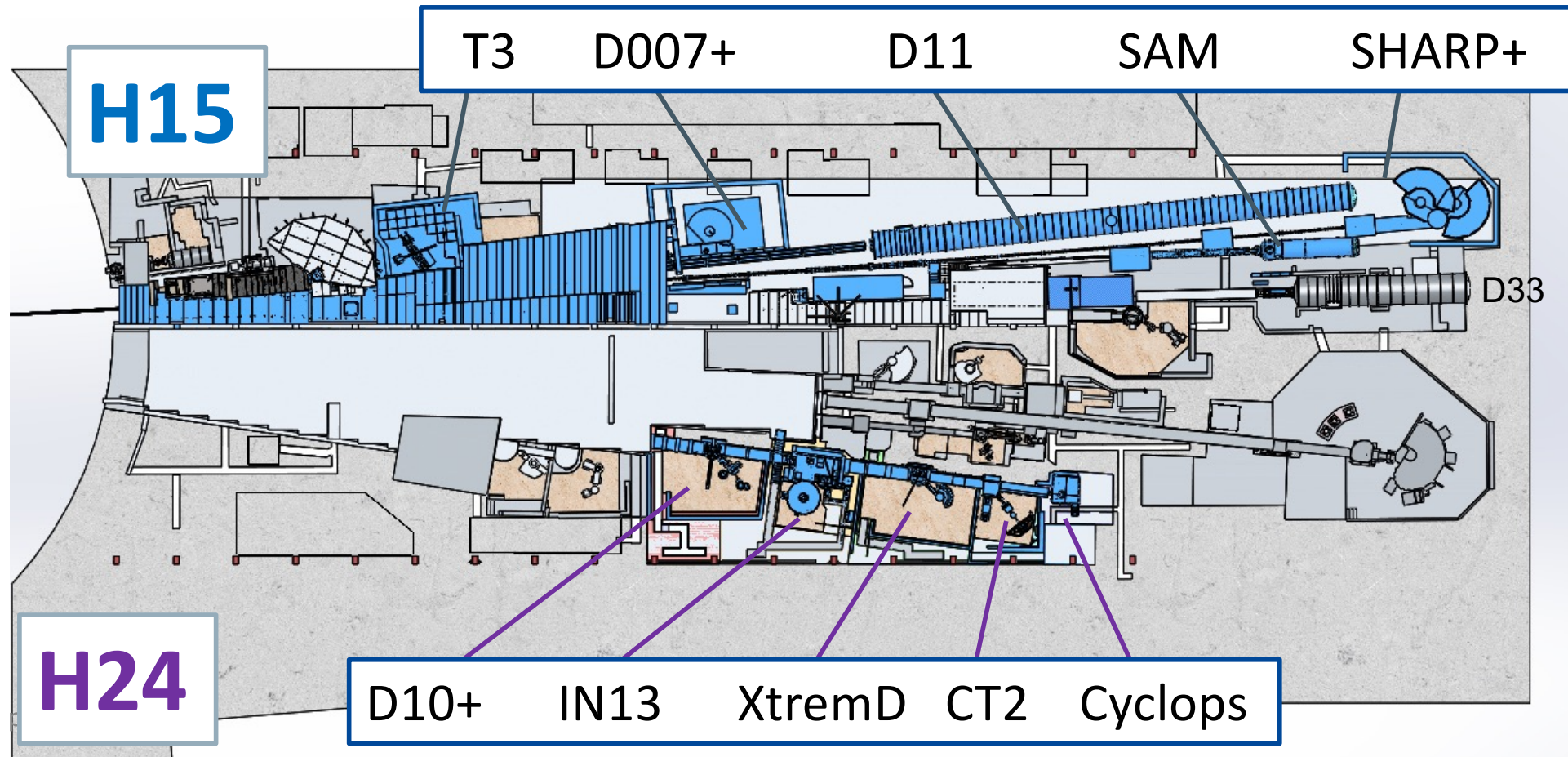
Guide Hall ILL7

Guide projects H15 and H24 before October 2021



Guide Hall ILL7

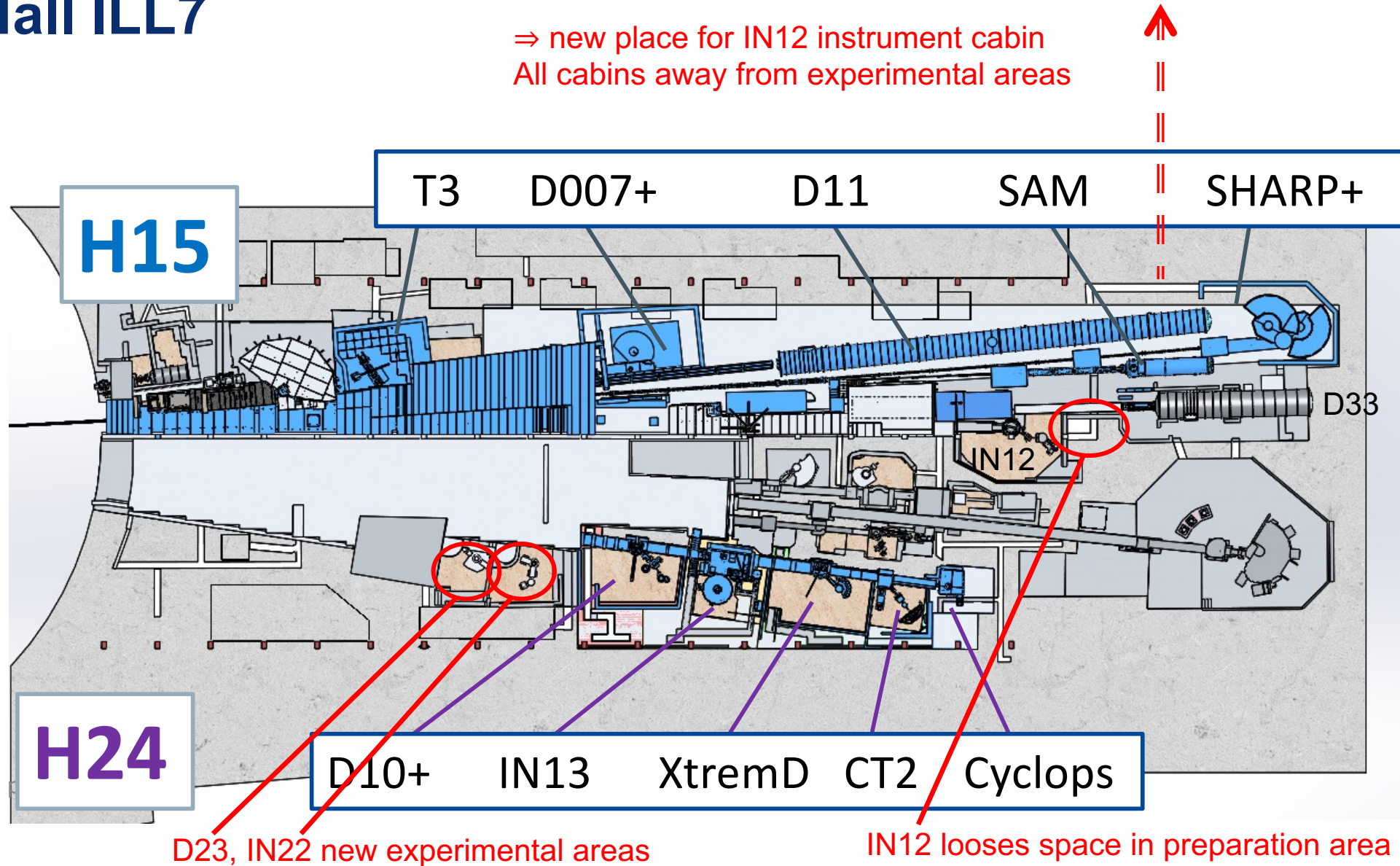
Guide projects H15 and H24



Guide Hall ILL7

Sharp at end of guide hall ⇒ new acces to science building

⇒ new place for IN12 instrument cabin
All cabins away from experimental areas



D23, IN22 new experimental areas

IN12 loses space in preparation area

Guide Hall ILL7

H24: cicvil works for marble floors for D10, IN13, XtremD, Cyclops, (IN22,D23)



Guide Hall ILL7

H15: civil works for floors for SAM,D11, (Sharp), guide H15



Mitglied der



What happens at IN12, IN22, D23

The cold three-axis spectrometer IN12 (FZJ):

- Possibly additional Silicon monochromator
(or additional bender for polarized neutrons)

The thermal three-axis spectrometer IN22 (CEA Grenoble):

- Pulsed 40T magnet fully operational since 2019
- Neutron resonant spin-echo–option ZETA fully operational in 2023

The thermal diffractometer D23 (CEA Grenoble):

- New multidetector CCD cameras instead of PSD
- find propagation vectors, determine fast phase diagrams
- direct visualization of reciprocal space

