



**High
Luminosity
LHC**

BGC Version 3 at CERN

O. Sedlacek, H. Zhang, O. Stringer, S. Mazzone
30.03.2022



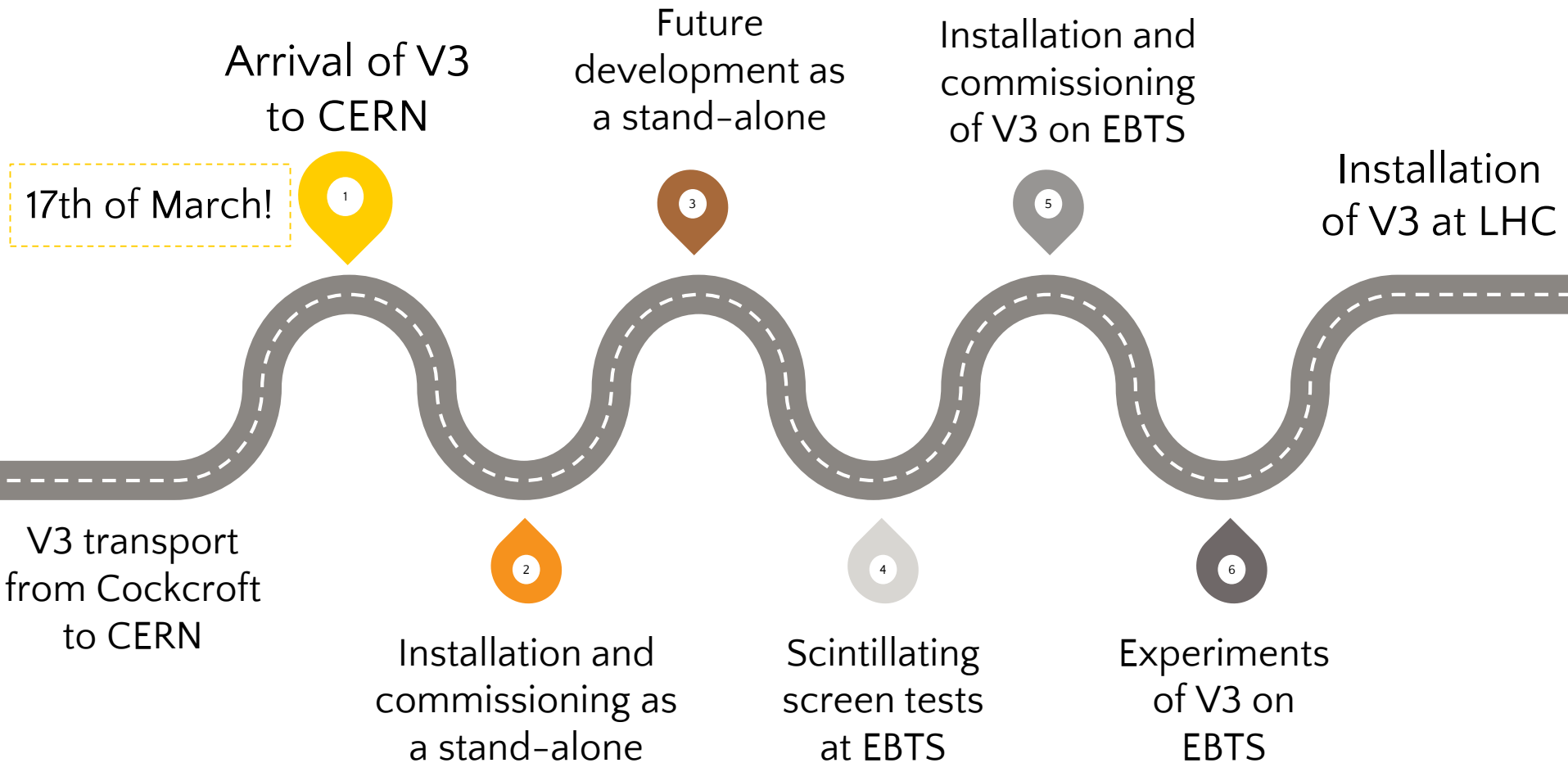
The HiLumi LHC Design Study is included in the High Luminosity LHC project and is partly funded by the European Commission within the Framework Programme 7 Capacities Specific Programme, Grant Agreement 284404.



Outline

- ① Arrival
- ② Current Installation
- ③ Future plans
- ④ Experimental plans for EBTS

Journey of V3 at CERN





Goods Reception
Réception des Marchandises

Linde

GAS JET BASED BEAM PROFILE MONITOR

High Luminosity LHC

GSI

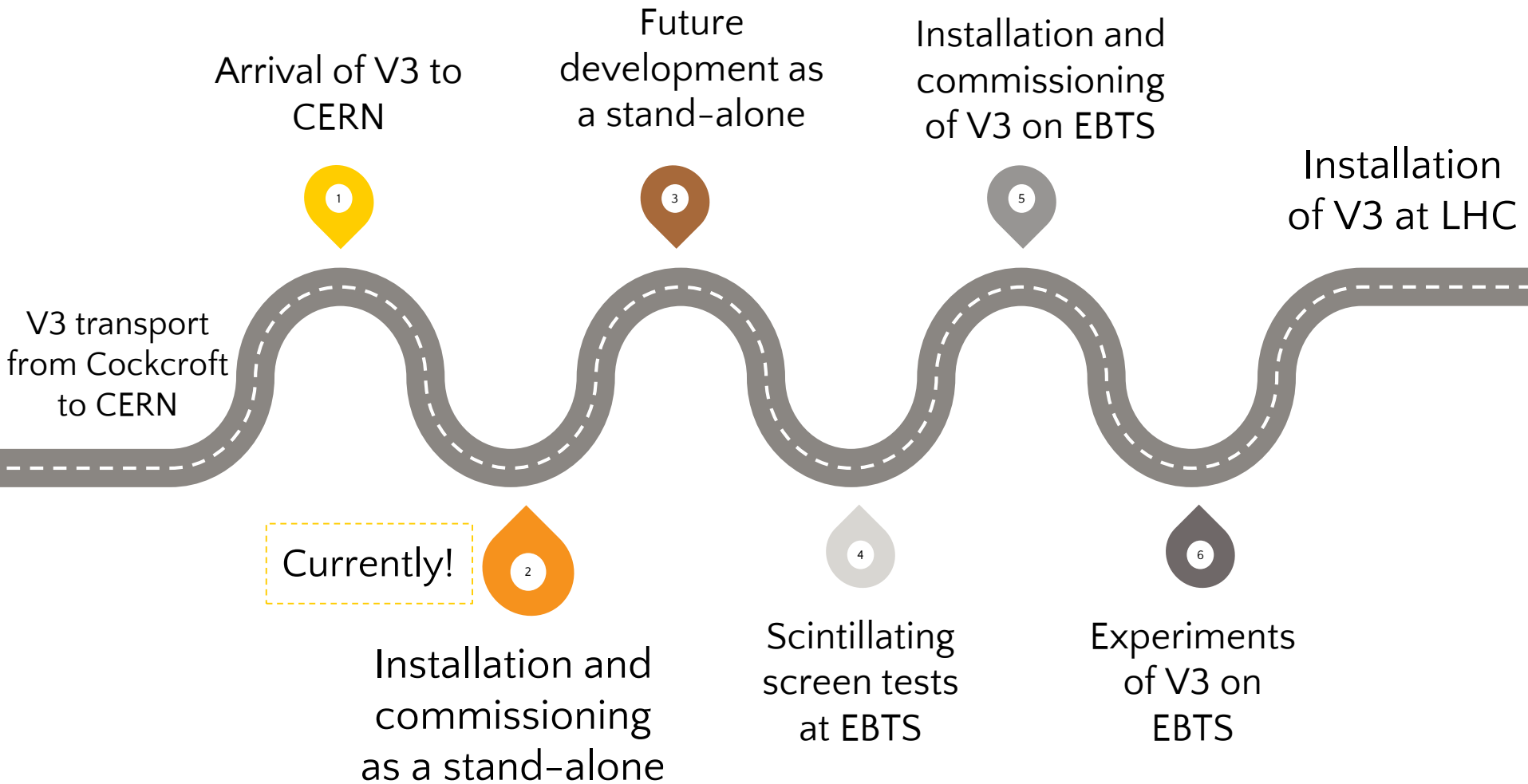
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QUASAR





Journey of V3 at CERN





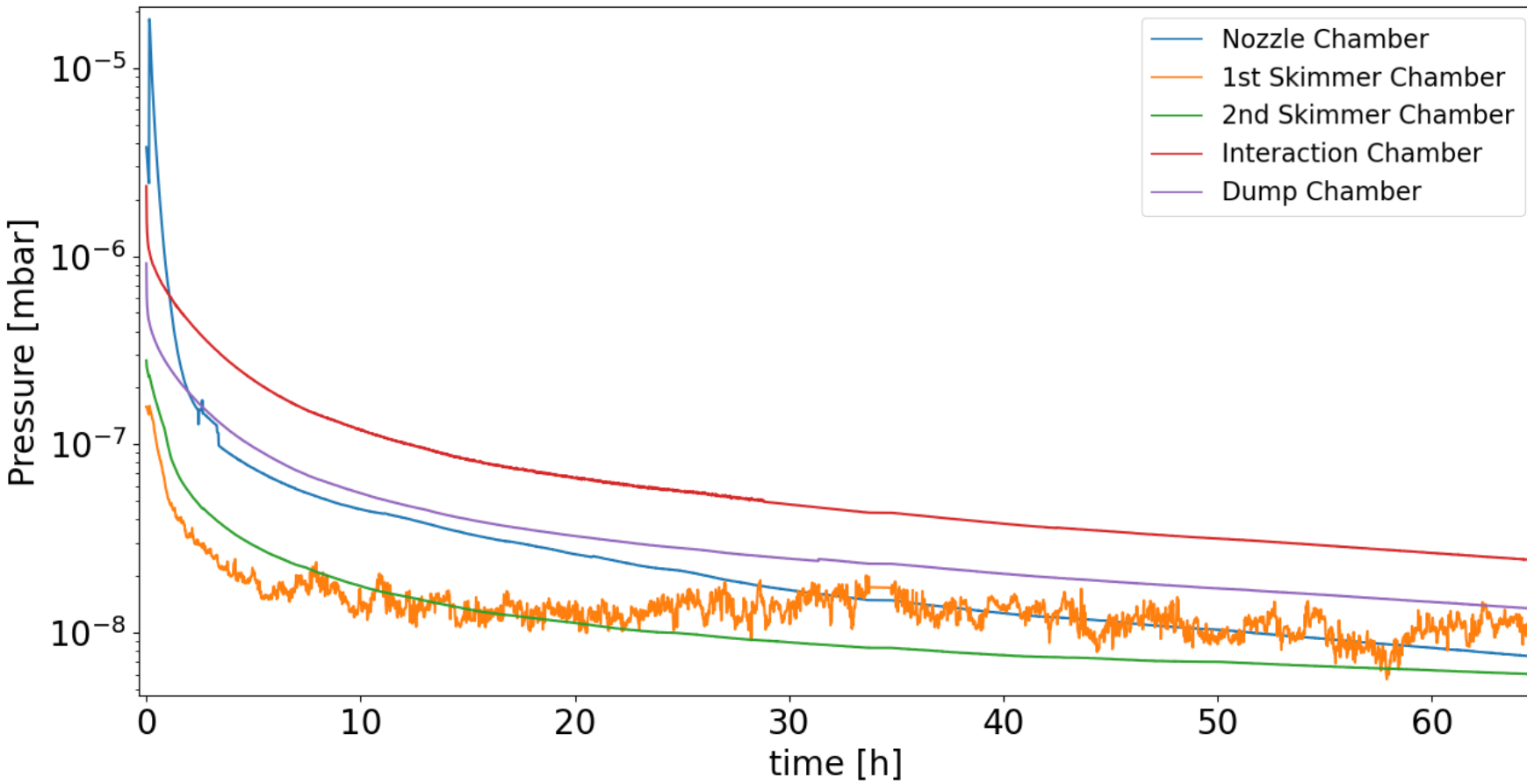
Version 3 of Gas Jet
monitor installed at CERN!

Current status of V3 at CERN

- Nozzle-Skimmer assembly realigned
 - Alignment setup in lab 865/1-A04
 - Alignment laser on V3 check successful!
- System closed
 - Last Friday (25.3.) pumping started
 - After cca 25min - pressures $\sim 10^{-7}$ mbar
 - After cca 70h - pressures: 10^{-8} - 10^{-9} mbar
 - > Successful system pump down!



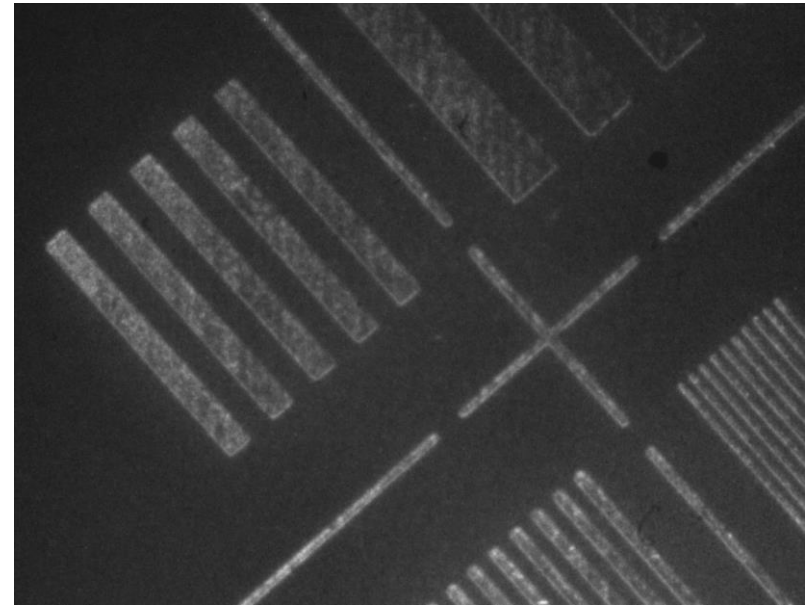
Pressures during pump down



● Current status of V3 at CERN

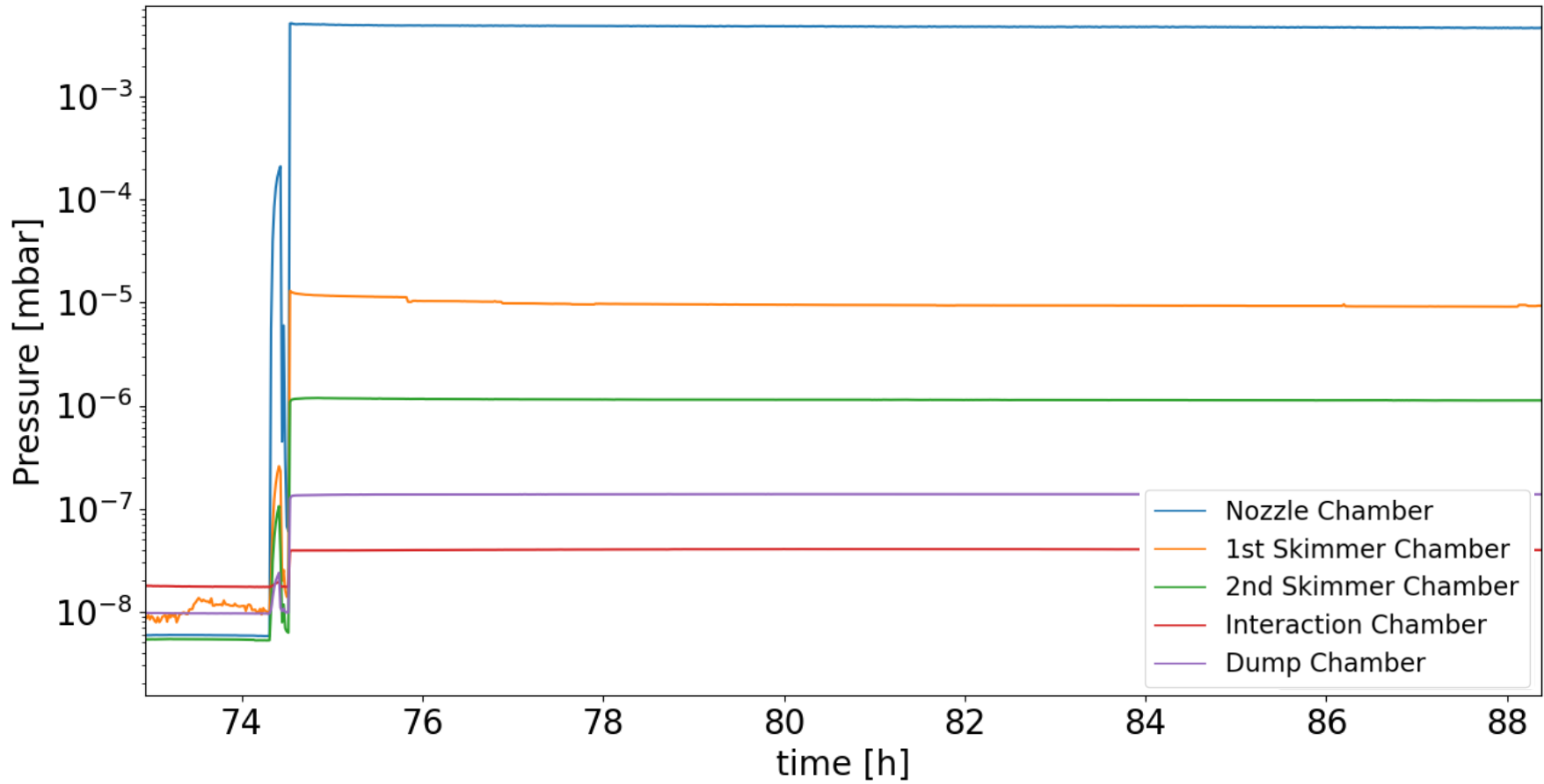
- Intensified camera
 - Hamamatsu camera installed
 - Custom mount
 - Focused on the target
- Gas Jet tested – Successful!
- Electron gun
 - Tested and ready

→ System ready for gas jet measurements!

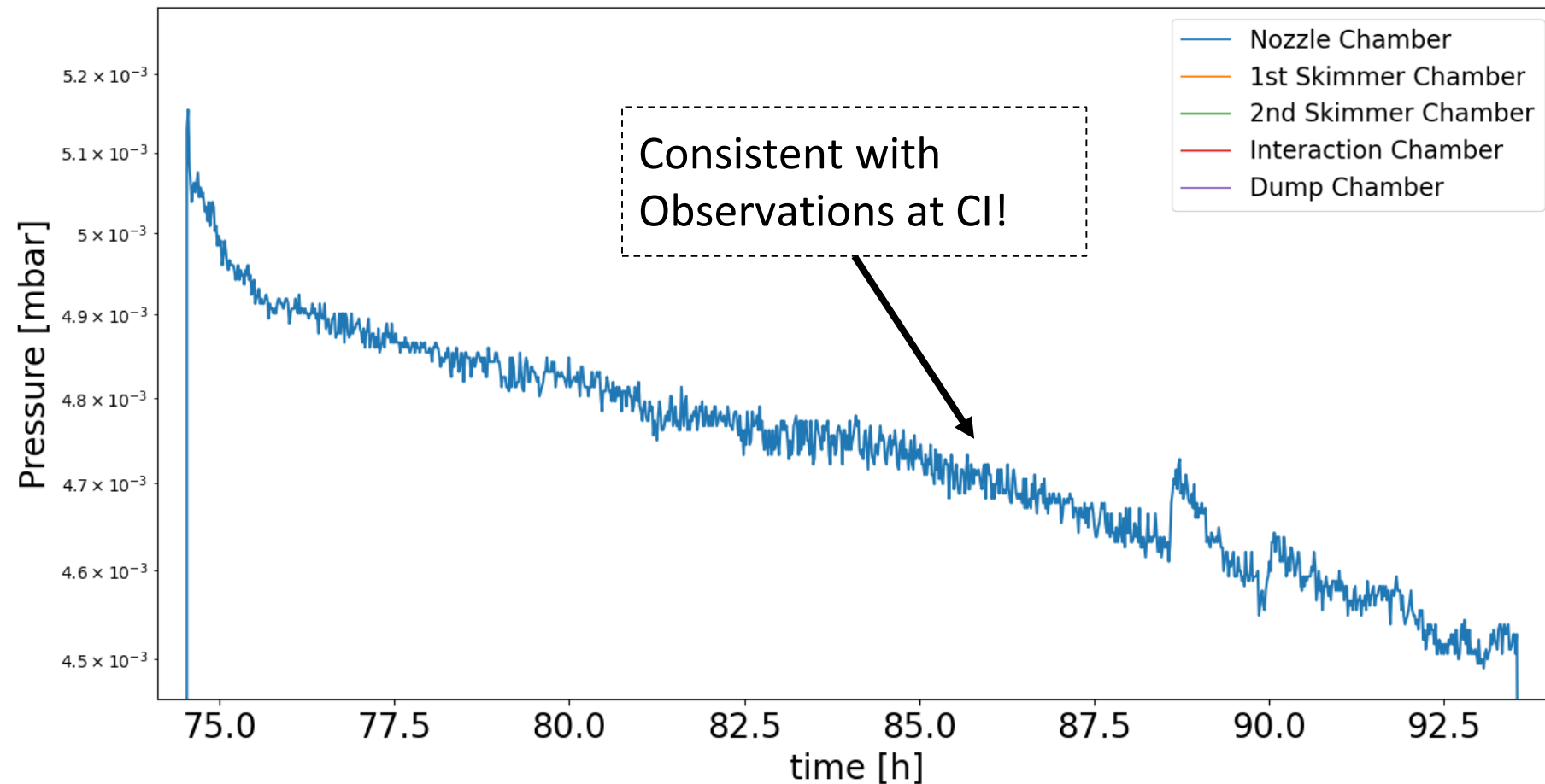




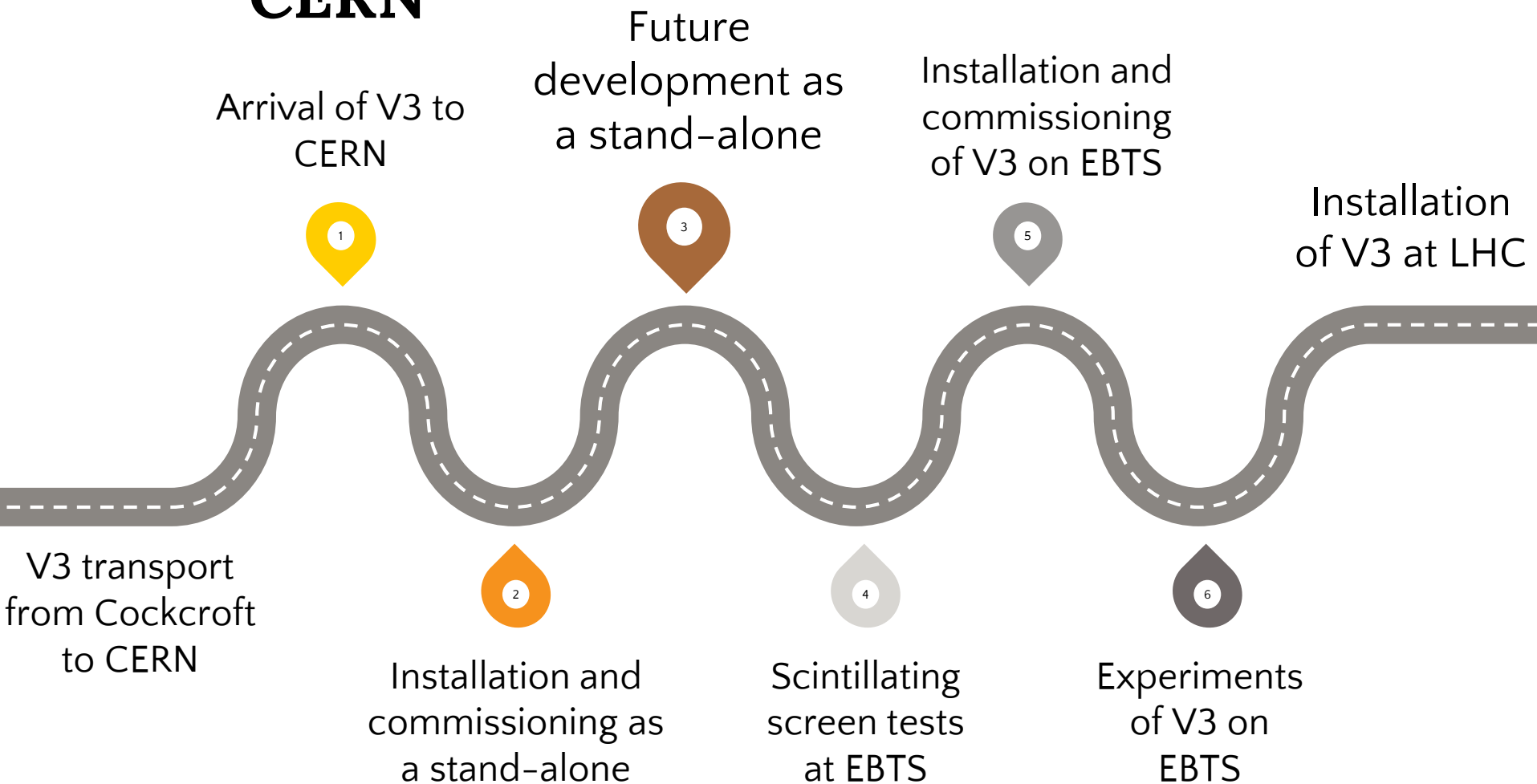
Pressures with Gas jet



Pressures with Gas jet - Nozzle Chamber



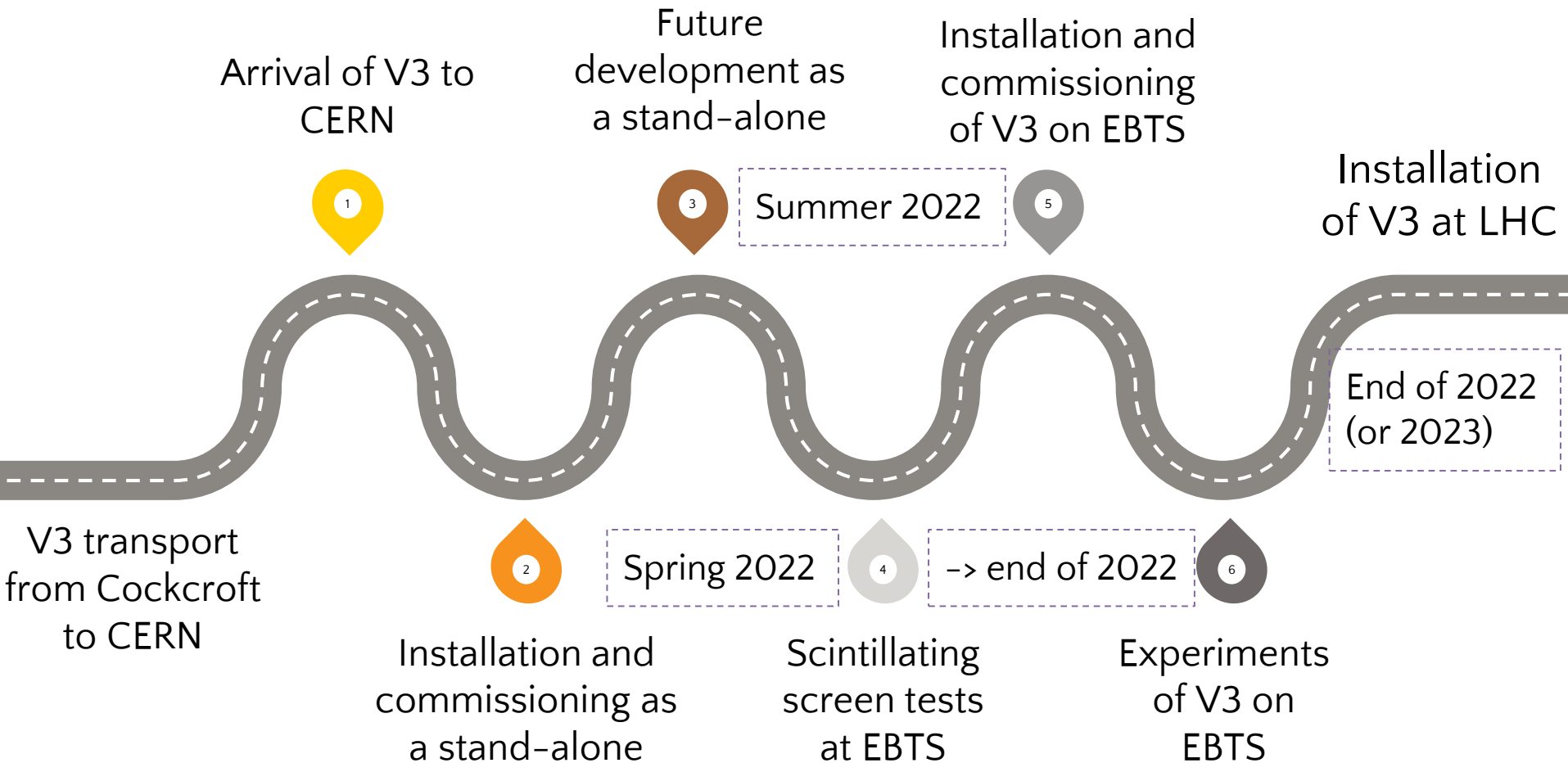
Journey of V3 at CERN



Future plans - Stand-alone

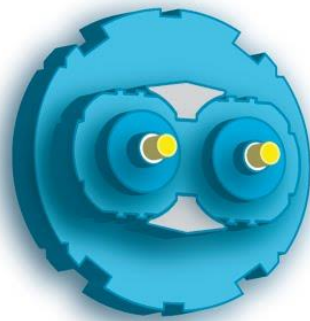
- Stability of the gas jet
 - Different 3rd skimmer effects
 - Profile stability
- Vacuum scenarios
 - Preparation for LHC
- Further studies of the divergent-convergent nozzle
 - Alignment
- NEG pump tests
 - Saturation, pressure equilibrium afterwards

Journey of V3 at CERN



Experimental plan at EBTS

- CHROMOX screen tests
 - Hollow electron beam profile at BGC position
 - Before BGC installation
- BGC installation and commissioning on EBTS
- Cathode light background
- Gas Jet measurements of Hollow electron beam profile
 - Matching the CHROMOX conditions
 - Studying different beam settings
 - Different gases (N₂, Ne, Ar)



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Thank you for your attention

Any questions?

ondrej.sedlacek@cern.ch



Science and
Technology
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LIV.

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The Cockcroft Institute
of Accelerator Science and Technology



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