

# NL Installation Tasks

ALPS Collaboration Meeting - June 2020

Michael Hartman  
The Internet, 08.06.2020



# Overview

- > Installation Materiel
- > NL Optical Installation Tasks
- > Points of Discussion
- > Status

# Installation Materiel

## Materiel for PMC commissioning and NL Table Population

- > Cleanroom

- > Safety

- > Lab Supply

- > Core Gen Components

## Materiel for PC commissioning

# Installation Materiel

## Materiel for PMC commissioning and NL Table Population

- > Cleanroom
  - Cleanliness (cleanroom garb, etc)
  - Roominess (lights, power, network connectivity, etc)
  - Optical table
- > Safety
- > Lab Supply
- > Core Gen Components

## Materiel for PC commissioning

# Installation Materiel

## Materiel for PMC commissioning and NL Table Population

- > Cleanroom
  - Cleanliness (cleanroom garb, etc)
  - Roominess (lights, power, network connectivity, etc)
  - Optical table
- > Safety
  - Goggles
  - Shutters (DESY LS-1)
  - Working concept (commissioning)
- > Lab Supply
  
- > Core Gen Components

## Materiel for PC commissioning

# Installation Materiel

## Materiel for PMC commissioning and NL Table Population

- > Cleanroom
  - Cleanliness (cleanroom garb, etc)
  - Roominess (lights, power, network connectivity, etc)
  - Optical table
- > Safety
  - Goggles
  - Shutters (DESY LS-1)
  - Working concept (commissioning)
- > Lab Supply
  - Hand tools
  - Test equipment (oscilloscope, function generator, etc)
  - Basic optics tools (laser power/profile measurement, stock optomechanics, etc)
  - Clean room supply (glassware, solvents, wipes, cleanroom lab books, pens, etc)
- > Core Gen Components

## Materiel for PC commissioning

# Installation Materiel

## Materiel for PMC commissioning and NL Table Population

- > Cleanroom
  - Cleanliness (cleanroom garb, etc)
  - Roominess (lights, power, network connectivity, etc)
  - Optical table
- > Safety
  - Goggles
  - Shutters (DESY LS-1)
  - Working concept (commissioning)
- > Lab Supply
  - Hand tools
  - Test equipment (oscilloscope, function generator, etc)
  - Basic optics tools (laser power/profile measurement, stock optomechanics, etc)
  - Clean room supply (glassware, solvents, wipes, cleanroom lab books, pens, etc)
- > Core Gen Components
  - HPL
  - Input optics/optomechanics
  - Electronics (control and fieldbox for HPL and PMC)

## Materiel for PC commissioning

## Installation Materiel cont'd

### Materiel for PMC commissioning and NL Table Population

- > Cleanroom
- > Safety
- > Lab Supply
- > Core Gen Components

### Materiel for PC commissioning

- > IA
- > Central Optical Breadboard
- > Vacuum



## Installation Materiel cont'd

### Materiel for PMC commissioning and NL Table Population

- > Cleanroom
- > Safety
- > Lab Supply
- > Core Gen Components

### Materiel for PC commissioning

- > IA
  - Alignment reference (ie. apertures)
- > Central Optical Breadboard
  
- > Vacuum

## Installation Materiel cont'd

### Materiel for PMC commissioning and NL Table Population

- > Cleanroom
- > Safety
- > Lab Supply
- > Core Gen Components

### Materiel for PC commissioning

- > IA
  - Alignment reference (ie. apertures)
- > Central Optical Breadboard
  - PC end mirror
- > Vacuum

## Installation Materiel cont'd

### Materiel for PMC commissioning and NL Table Population

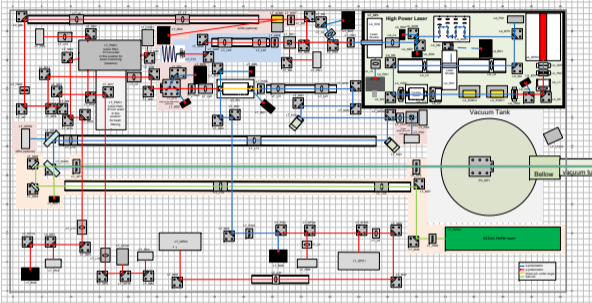
- > Cleanroom
- > Safety
- > Lab Supply
- > Core Gen Components

### Materiel for PC commissioning

- > IA
  - Alignment reference (ie. apertures)
- > Central Optical Breadboard
  - PC end mirror
- > Vacuum
  - NL table tank
  - Beam tube
  - COB

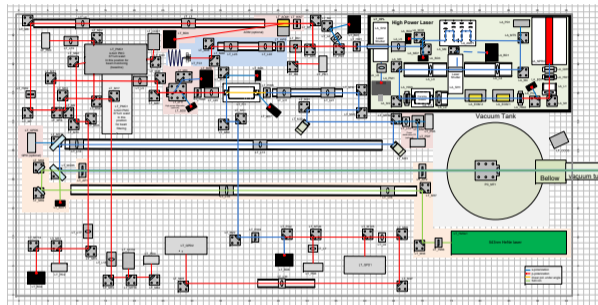
# NL Optical Installation Tasks

1 Enter components: Clean, inspect, “put-in-place”



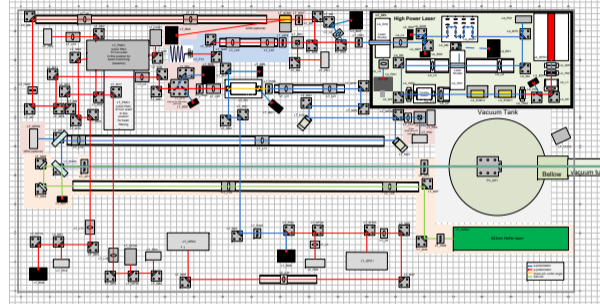
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael



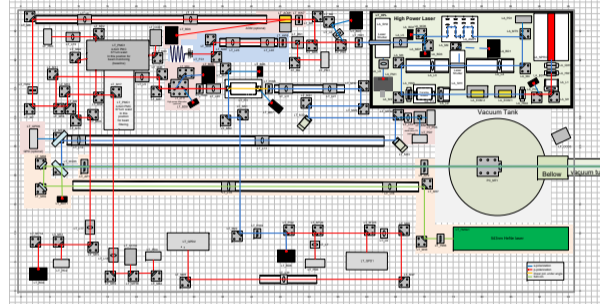
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei



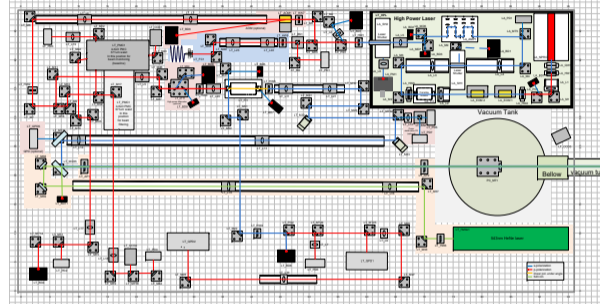
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI



# NL Optical Installation Tasks

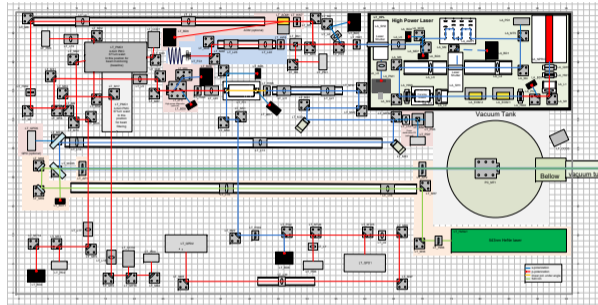
- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI





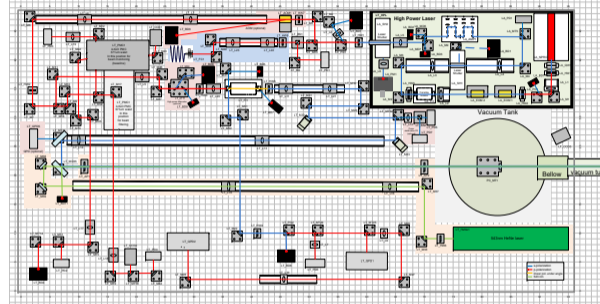
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors



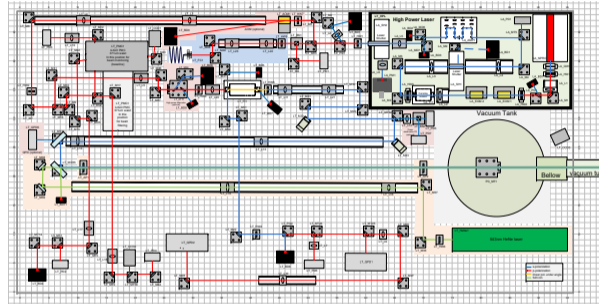
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC



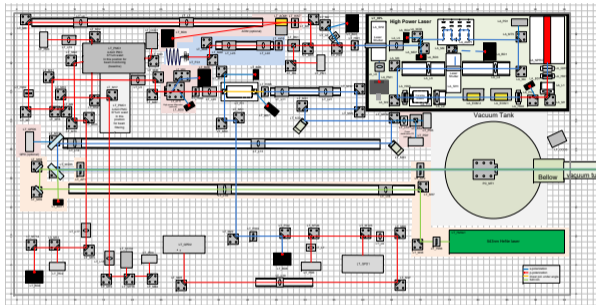
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC
- 8 Adjust (pen)ultimate cavity steering optics



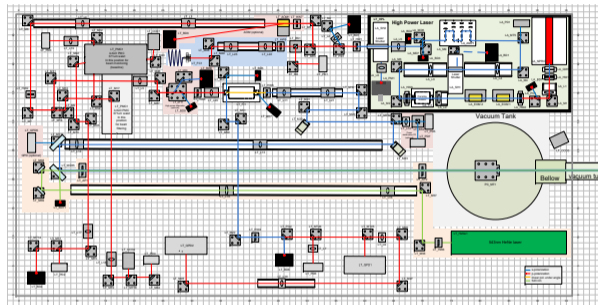
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC
- 8 Adjust (pen)ultimate cavity steering optics
- 9 Use an “off-the-shelf” mirror for “PC\_M1”
  - PC\_M1’s 6-axis mount: align back-reflection



# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commission the PMC: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC
- 8 Adjust (pen)ultimate cavity steering optics
- 9 Use an “off-the-shelf” mirror for “PC\_M1”
  - PC\_M1’s 6-axis mount: align back-reflection
- 10 Hand back-reflected beam to Ali

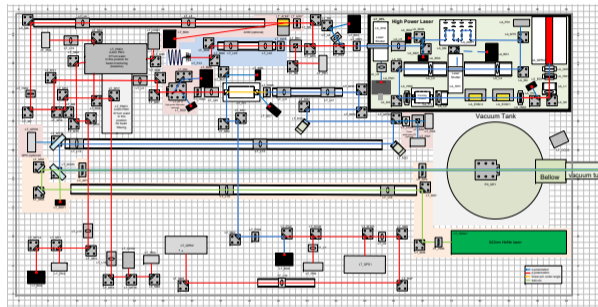


# Points of Discussion

- > PMC
- > Inventory control
- > Slow Control interface
- > Visit to AEI

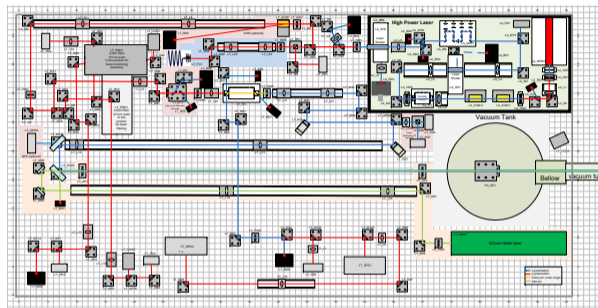
# NL Optical Installation Tasks

1 Enter components: Clean, inspect, “put-in-place”



# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael





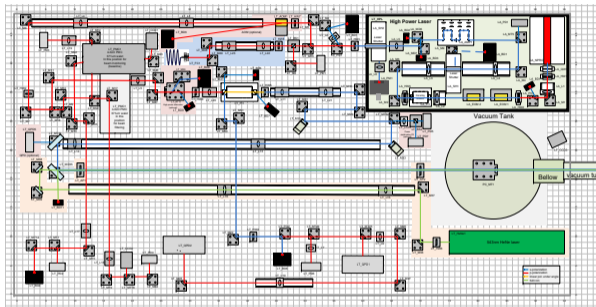
# NL Optical Installation Tasks

1 Enter components: Clean, inspect, “put-in-place”

2 Commissioning of HPL: Li-Wei, Michael

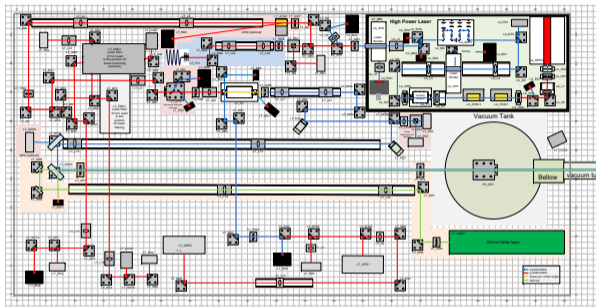
3 Work in parallel

- Initial Alignment: Li-Wei, Kanioar, Michael
- Commissioning the IO: Michael, Kanioar, Li-Wei



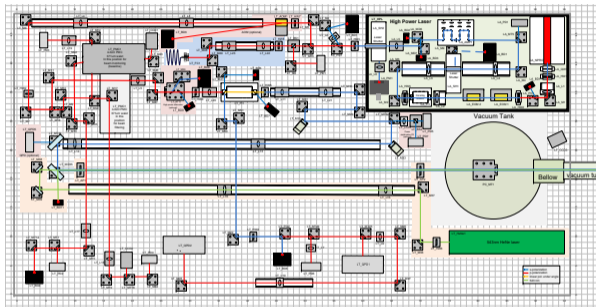
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI



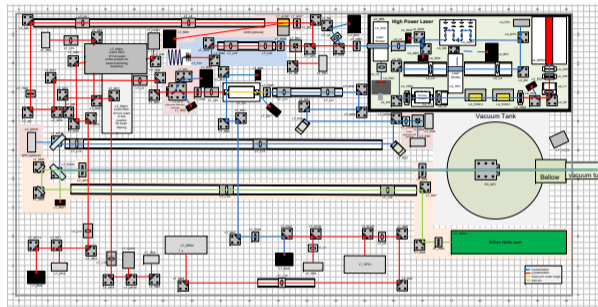
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI



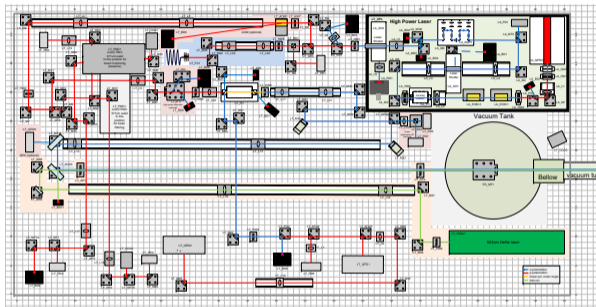
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors



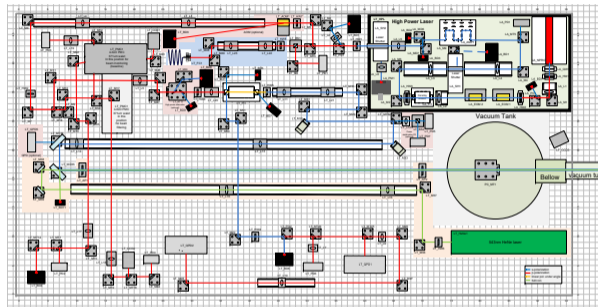
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC



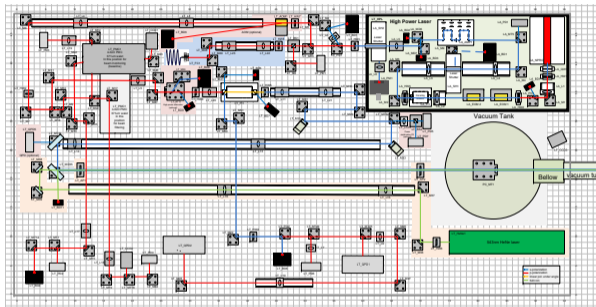
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC
- 8 Adjust (pen)ultimate cavity steering optics



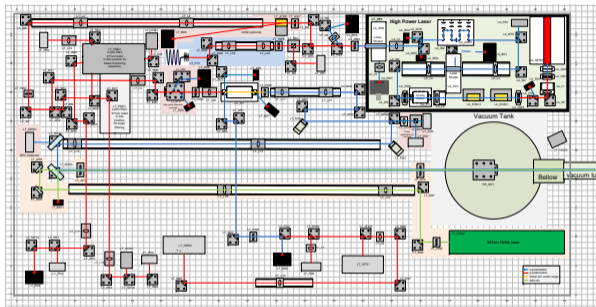
# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC
- 8 Adjust (pen)ultimate cavity steering optics
- 9 Use an “off-the-shelf” mirror for “PC\_M1”



# NL Optical Installation Tasks

- 1 Enter components: Clean, inspect, “put-in-place”
- 2 Commissioning of HPL: Li-Wei, Michael
- 3 Work in parallel
  - Initial Alignment: Li-Wei, Kanioar, Michael
  - Commissioning the IO: Michael, Kanioar, Li-Wei
- 4 Modematching for FI
- 5 Align and optimize the FI
- 6 Adjust piezo actuated steering mirrors
- 7 Perform modematching for PC
- 8 Adjust (pen)ultimate cavity steering optics
- 9 Use an “off-the-shelf” mirror for “PC\_M1”
- 10 Work in parallel
  - Auto-Alignment: Ali
  - Commissioning the PMC: Michael, Kanioar





# Points of Discussion

- > PMC
- > Inventory control
- > Slow Control interface
- > Visit to AEI

# Status

<b>Task</b>	<b>Status/Date</b>	<b>Responsible</b>	<b>Comments</b>
Laser Safety	Evolving	J. Schaffran / DESY	Goggles bought; Concept evolving
Lab Supply	Done	M. Hartman / DESY	
IA Supply	Done	M. Hartman / DESY	Though evolving? See Li-Wei's talk
Gen Components Supply	?	J. Pold ?	
NL Room Construction	08/21/20	U. Schneekloth / DESY	
HPL Commissioning	24.08.2020 – 27.08.2020	Li-Wei & M. Hartman/ DESY	
IA	27.08.2020 – 30.08.2020	Li-Wei / DESY	
NL Optics Installation	27.08.2020 – 02.09.2020	M. Hartman & K. Karan/ DESY	
COB installation, PC MT2	22.10.2020 – 19.01.2021	A. Hallal /Florida	
PC Commissioning	20.01.2020 – 11.03.2021	M. Hartman / DESY	

\*dates per the 20 April 2020 Schedule



# Thank you!

## Contact

**DESY.** Deutsches  
Elektronen-Synchrotron

[www.desy.de](http://www.desy.de)

Michael Hartman  
📞 0000-0002-6046-1402  
ALPS  
[michael.hartman@desy.de](mailto:michael.hartman@desy.de)  
+49 (0)40 8998 2459

# Gen Layout

