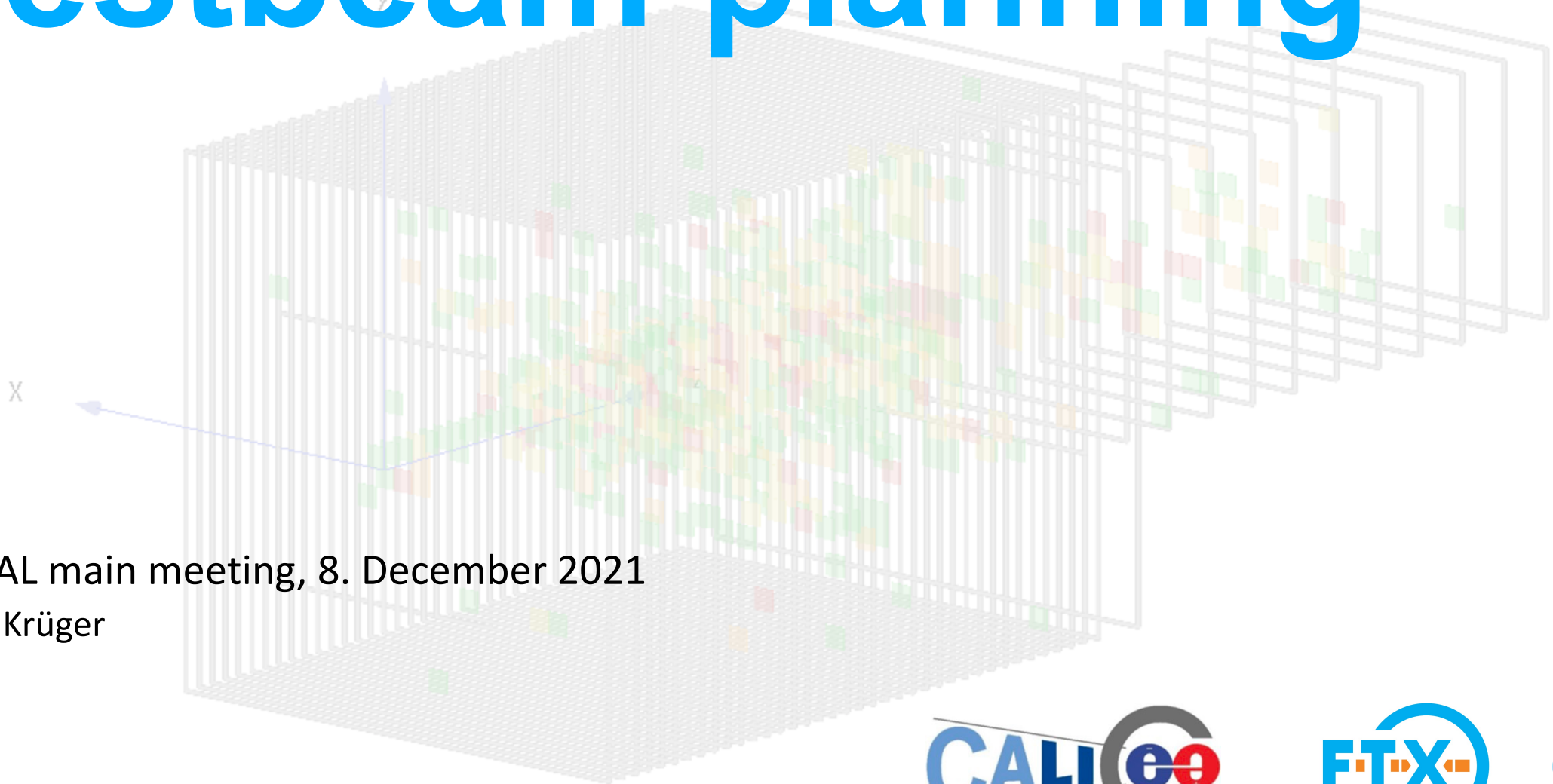


Testbeam planning

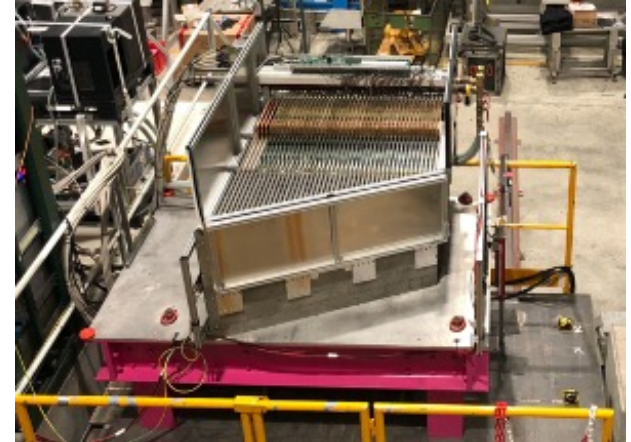


AHCAL main meeting, 8. December 2021

Katja Krüger

Plans for the large prototype

- Was tested in beam at DESY and CERN SPS in 2018
- Measurements still planned
 - **With “ultimate” time resolution (ILC bunch clock)**
 - With tungsten absorber
 - **Running with ECAL:**
 - **requested 2 weeks of beam time in 2022 at SPS for SiW ECAL + AHCAL**
 - In addition: 1 week of parasitic muons
- Preparation
 - ILC mode: well tested already with smaller setups
 - Test of common running:
 - expert discussions ongoing
 - 2 weeks for SiW ECAL (+AHCAL) 7-20 March 2022 at DESY
 - Test large prototype hardware before travelling to CERN
 - Needs person power at DESY
 - New KLauS + Megatile layer
- **CERN Testbeam (if we get beam time): needs experts and shiftees at CERN**



DESY Testbeam Schedule

	Week	TB21		TB22		TB24/1		TB24		
			DATURA		DURANTA	PCMAG	Telescope in PCMAG		AZALEA	
3-Jan-22	1	Shutdown								
10-Jan-22	2									
17-Jan-22	3									
24-Jan-22	4									
31-Jan-22	5	Startup		Startup		Startup		Startup		ANNOUNCED
7-Feb-22	6	CMS-InnerTracker	X	HVMAPS	X			MONOPIX2	X	
14-Feb-22	7	ARCADIA	X	HVMAPS	X			Mimosis		
21-Feb-22	8	ARCADIA	X	ATLAS-ITk-Pixels	X			Telescope-Dev	X	
28-Feb-22	9	ATLAS-HGTD	X	ATLAS-ITk-Pixels	X					
7-Mar-22	10	ATLAS-HGTD	X	CALICE-SiW-ECAL	X					
14-Mar-22	11	CMS-InnerTracker	X	CALICE-SiW-ECAL	X			ALICE-ITS3	X	
21-Mar-22	12	CMS Outer Tracker PS	X	DCIRM	X					
28-Mar-22	13			PSIMAPS	X					
4-Apr-22	14			PSIMAPS	X			APIX3	X	
11-Apr-22	15									
18-Apr-22	16			Telescope-Dev	X					
25-Apr-22	17	CMS-InnerTracker	X	Mu3e	X			CALICE AHCAL	X	
2-May-22	18	CMS-InnerTracker	X	Mu3e	X			TPEX		
9-May-22	19			MONOPIX2	X			TPEX		
16-May-22	20							LHCb-ECAL	X	
23-May-22	21	CMS-InnerTracker	X	LHCb-MightyPix	X			LHCb-ECAL	X	
30-May-22	22									
6-Jun-22	23	Telescope-Dev	X							
13-Jun-22	24	CMS Outer Tracker	X	ATLAS-ITk-Strips	X			ALICE-ITS3	X	
20-Jun-22	25	CMS Outer Tracker	X	ATLAS-ITk-Strips	X					
27-Jun-22	26	TelePix	X	Belle-II CMOS	X					
4-Jul-22	27	TelePix	X	Belle-II CMOS	X					
11-Jul-22	28	CMS-InnerTracker	X							
18-Jul-22	29									

AHCAL developments

Alternative tile geometry: Megatile

- Pro: Would allow larger mechanical units, easier logistics
- Con: need to limit optical cross talk between (sub-)tiles, uniformity is a challenge
- Testbeam in 2021: good cross talk ($\sim 3\%$), reasonable uniformity

Alternative Readout ASIC: KLauS ASIC targeting low gain SiPMs (e.g. with $10\ \mu\text{m}$ pixels)

- Allows power pulsing as well as continuous readout
- Testbeams in 2021
 - Full HBU with KLauS5 (first 36-channel version)
 - Test setup with KLauS6b (improved TDC for better time resolution)
 - Performance as expected

Plan to construct one layer (4 HBUs) with KlauS HBUs with Megatiles for large technological prototype

