

# Plans of Korean DUNE

Kim Siyeon  
Chung-Ang University

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R&D Center, Chung-Ang University, Seoul



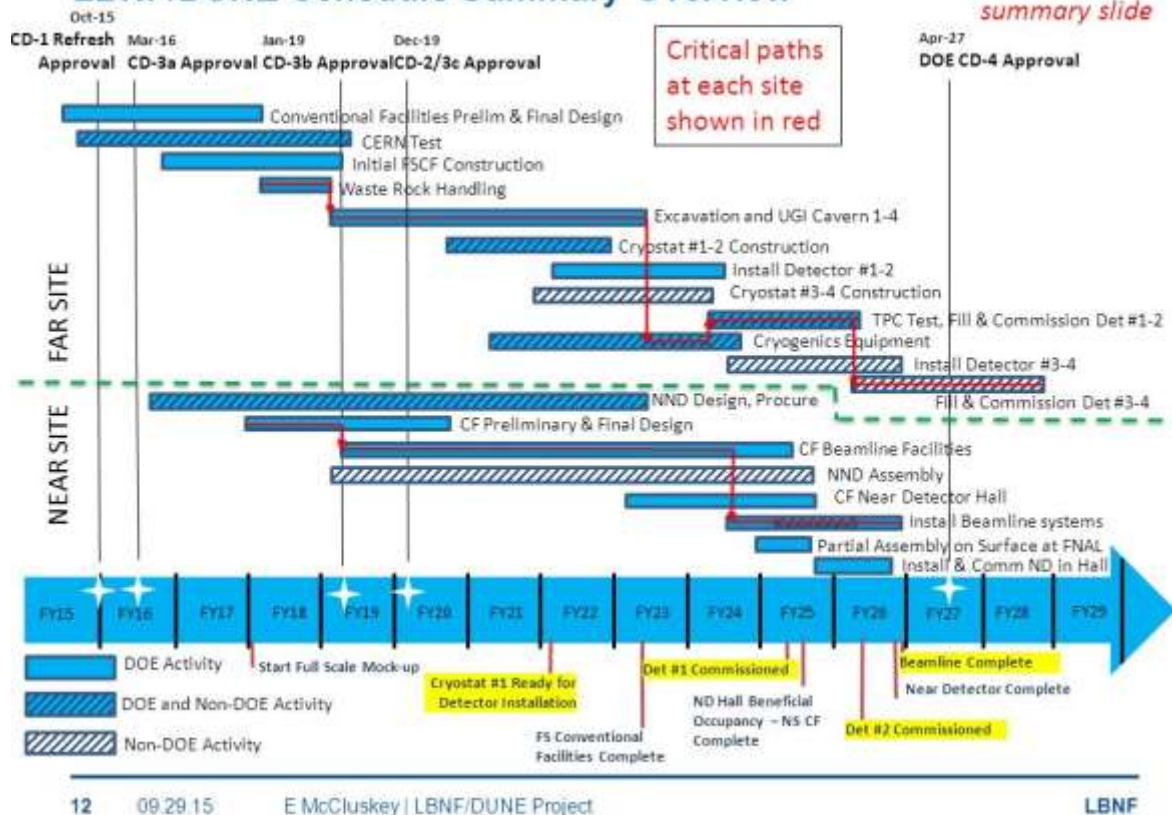
## Issues of DUNE Korea

- Motivation
- Members
- Money
  
- Opportunities for Next Generation:
  - Crucial Issues for Neutrino Physics and Beyond Standard Model
  - Challenge for Different Detection Techniques
  - Support Next Generation as Global Leaders.

- **Chung-Ang University**
  - Kim Siyeon(IR), Sunwoo Gwon, and 3 undergraduates
  - Chang Hyon Ha will join in 2020.
  - Near Detector working group
  - Service Job: ADS chip test for Cold electronics for ProtoDUNE SP at BNL.
  - Chang Hwan Jang's Master Degree: Discrimination of muons and anti-muons in DUNE Near Detector.
  - MC simulation using NDGGD and EdepSim in DUNE ND
  - Comparison of GENIE and NuWro for nu-Ar and nu-CH interactions.
  - Currently working on Neutron Background inside 3DST(in SAND).
- **KISTI**
  - Kihyeon Cho(IR), Insung Yeo
  - Computing and Software / BSM working group
- **Future contribution 2019 - 2028**
  - Near Detector Assembly and Construction
  - Grid-Farm for Proto-DUNE Data

# LBNF/DUNE Schedule Summary Overview

Either this or summary slide



2018: ProtoDUNEs at CERN

2019: Technical Design Report

2019: Far site excavation starts

2022: Installation of first module

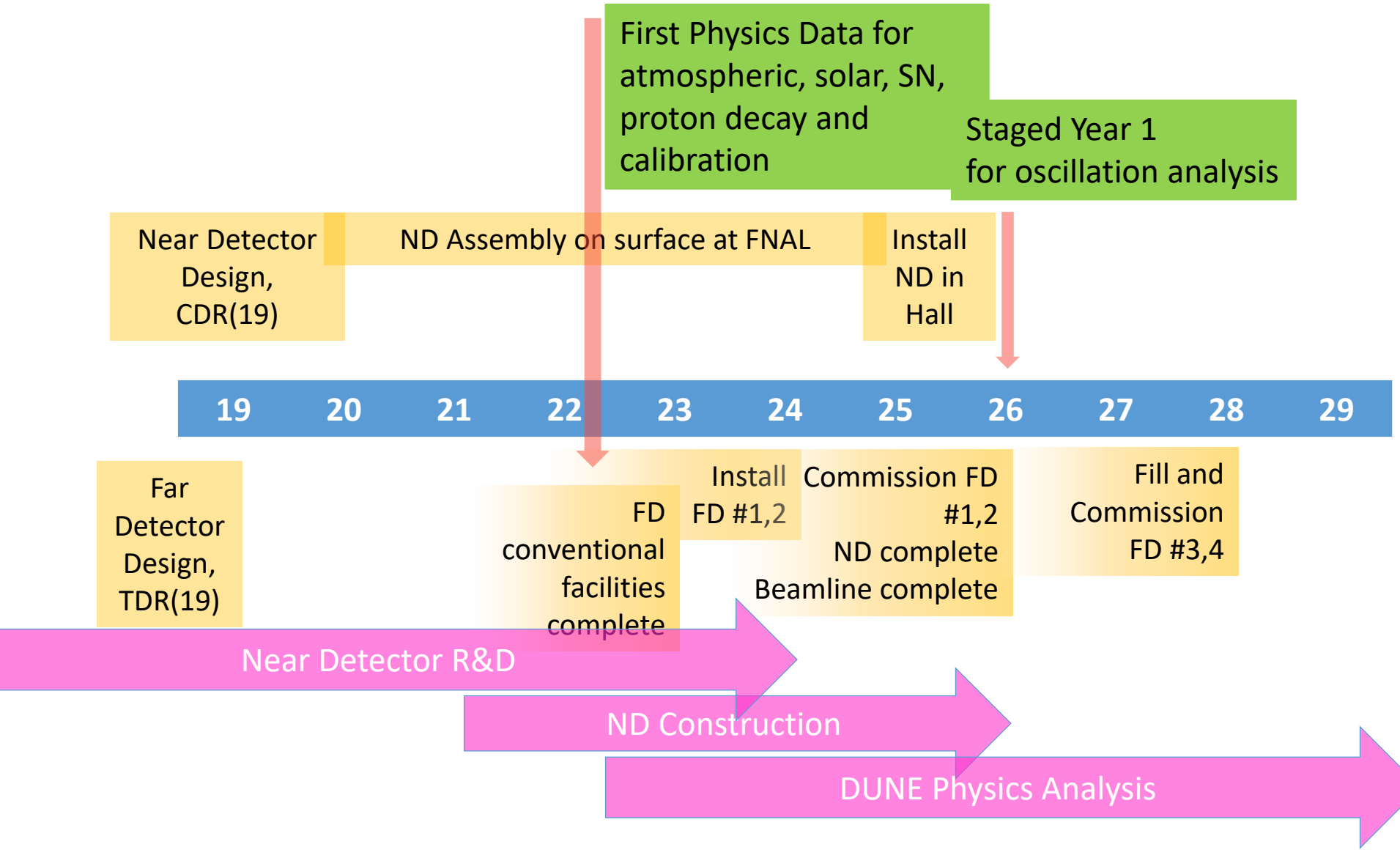
First physics data: Atmospheric, Supernova, solar, proton decay, calibration

2026: Neutrino beam available

## Critical Decision Schedule

Critical Decision Milestone	Schedule
CD-0 Approve Mission Need	1/8/2010 (Actual)
CD-1 Approve Alternative Selection and Cost Range	12/10/2012 (Actual)
CD-1 Approve Alternative Selection and Cost Range (Refresh)	11/5/2015 (Actual)
CD-3a Approve Initial LBNF Far Site Construction	2nd Quarter, FY2016
CD-3b Approve LBNF Near Site Preparation/Far Site Long Lead Procurement	2nd Quarter, FY2019
CD-2 Approve Performance Baseline	1st Quarter, FY2020
CD-3c Approve Start of Construction: Remaining LBNF FS, DUNE, LBNF NS	1st Quarter, FY2020
CD-4 Approve Project Completion	4th Quarter, FY2030

# Timeline





## Korean Contribution to ND - proposal to KHEP block funding

- [PLAN A] Manufacturing 3DST starts in 2021 and should end by 2026.
- Manufacturing specific parts in Korea : ~ US\$ 4M (50억) for 5 years
- Working site : in Korea.
- Koreans in more institutes can obtain service credits with local activities.
  
- [PLAN B] Manufacturing 3DST starts March 2021 and should end by 2026.
- Korean Contribution for 3DST :
  - Scintillator Cubes
  - Optical Fibers
  - MPPC
  - Mechanical Box
  - Electronics
- Hardware (10% of Sc-Cubes, DAQ's and MPPC) : US\$ 2M (25억) for 5 years
- Working site : Stony Brook University in USA



# Budget Estimation - proposal to KHEP block funding

- [KISTI Resource]
- GSDC for DUNE Data: with 5 member institutes in the collaboration
  
- [As of 2019] # of PI's = 2
- [Target] # of PI's -> 4 (2020) -> 10 (2026)
  - Researchers 15
  - Ph-D Students 20
  - More than 7 institutes
  
- [Budget until 2026] 150억 /5년
- Hardware for ND 50억 (2021 - 2026) -> 10억 /1년
- Researchers and data/computing experts -> 10억/ 1년
- Students, Soft expenses, M&O, local site construction -> 10억/ 1년
  
- [Budget from 2027] 150억 /5년 based on the size of Korean members.



# CAU-Fermilab Cooperative R&D Agreement

- The iCRADA includes exchange programs and financial support for DUNE and LBNF activities in Fermilab.
- CAU-Fermilab Neutrino Research Center(tentative) to be established.
- Researchers can join DUNE as associate members of the center.
- Open to young researchers with 30% FTE for DUNE.
- Planning the member application of Ha and others in January 2020.
- Expansion of DUNE Korea may be possible only if institutes hire new faculty. We need a better (bigger and stronger) neutrino physics community.



*The End*