Nuclear and Particle Physics Facility

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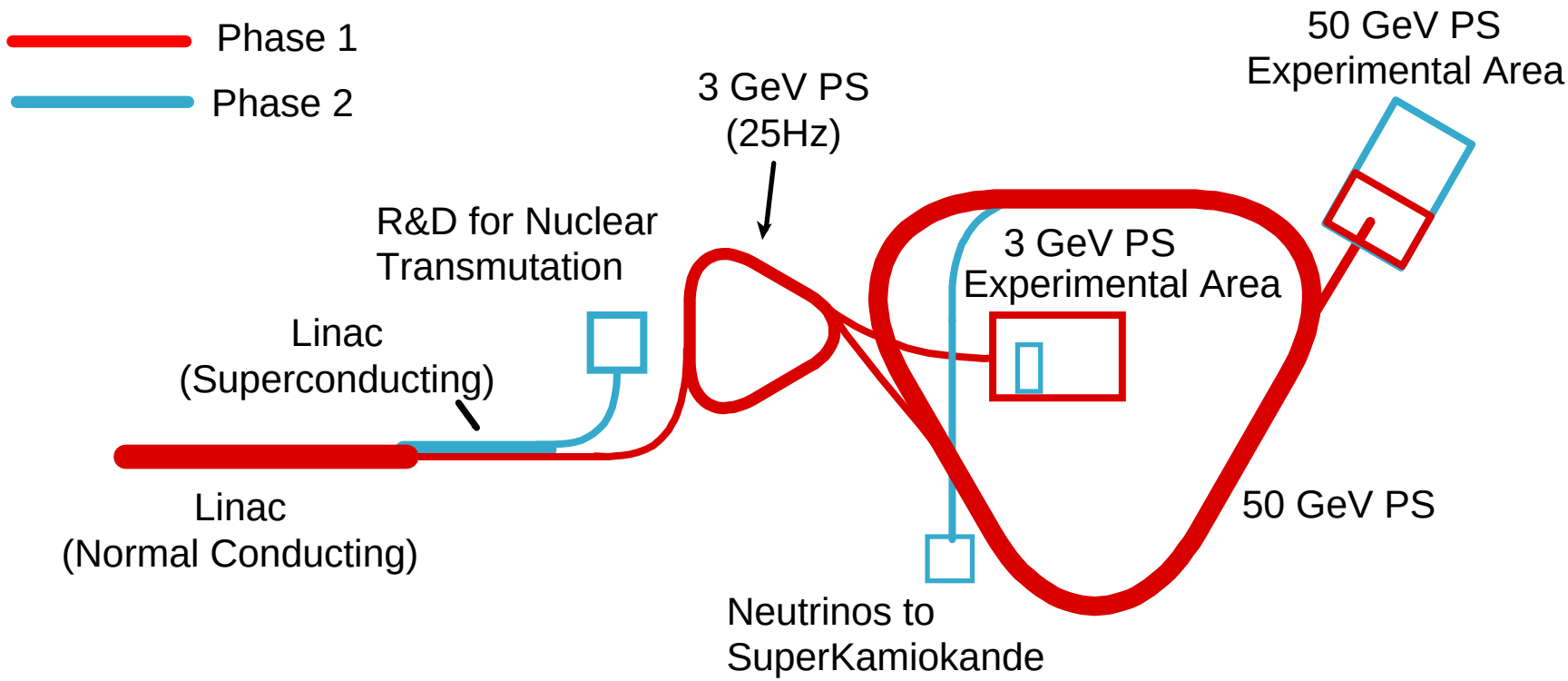
- Progress in 2002 and current status of facility design
- Introduction to:

  Hadron beam hall : Prof. K.-H.Tanaka
  Neutrino facility : Prof. K. Nishikawa

Accelerator complex



Proton beam

(Design parameters at the beginning)

α : relative beam power of RCS due to 200 MeV linac operation

- Fast extraction (ν facility)

energy	harm.	bunch	T	current	power
40 GeV	9	8	3.53s	15μA	0.6 MW
40 GeV	18 *)	15 *)	3.26s	30α μA	1.22α MW

(0.73MW for α=0.6)

- Slow extraction (K-hall)

						D.F.***)=
30 GeV **)	9	8	3.53s	15μA	0.45 MW	0.20
30 GeV	18 *)	15 *)	3.96s	25.2α μ	0.75αMW	~0.20

*) these operations have influence on neutron intensity.

**) proton energy is limited by electricity and cooling water capacity of the NP facility in Phase1.

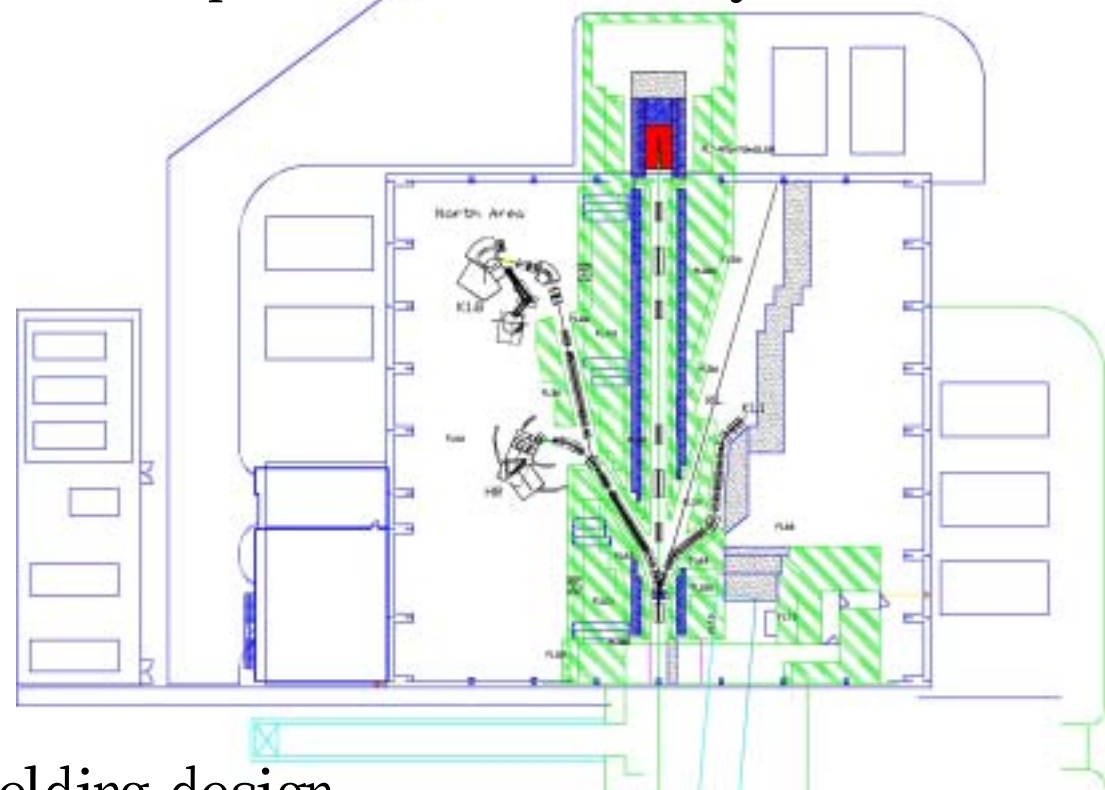
***)duty factor can be larger depending on flat-top length at 30 GeV.

Progress in 2002

- Hadron Hall (K-Hall)
  - A detailed design of buildings and civil engineering:
    - Based on conceptual design by the KEK construction department.
    - Ordered to an outside company and will be delivered soon.
    - Realistic cost estimate will follow.
  - R&D of beam line elements:
    - T1 water-cooled rotating target.
    - Beam dump with water-cooled Cu blocks.
    - Beam monitors
- Neutrino Facility
  - A design of the tunnel, target station, decay volume etc.
  - A study of proton beam line using combined SC magnets.
  - R&D of a water-cooled carbon-rod target, etc.
  - Fabrication of a part of decay volume.

Experimental hall layout

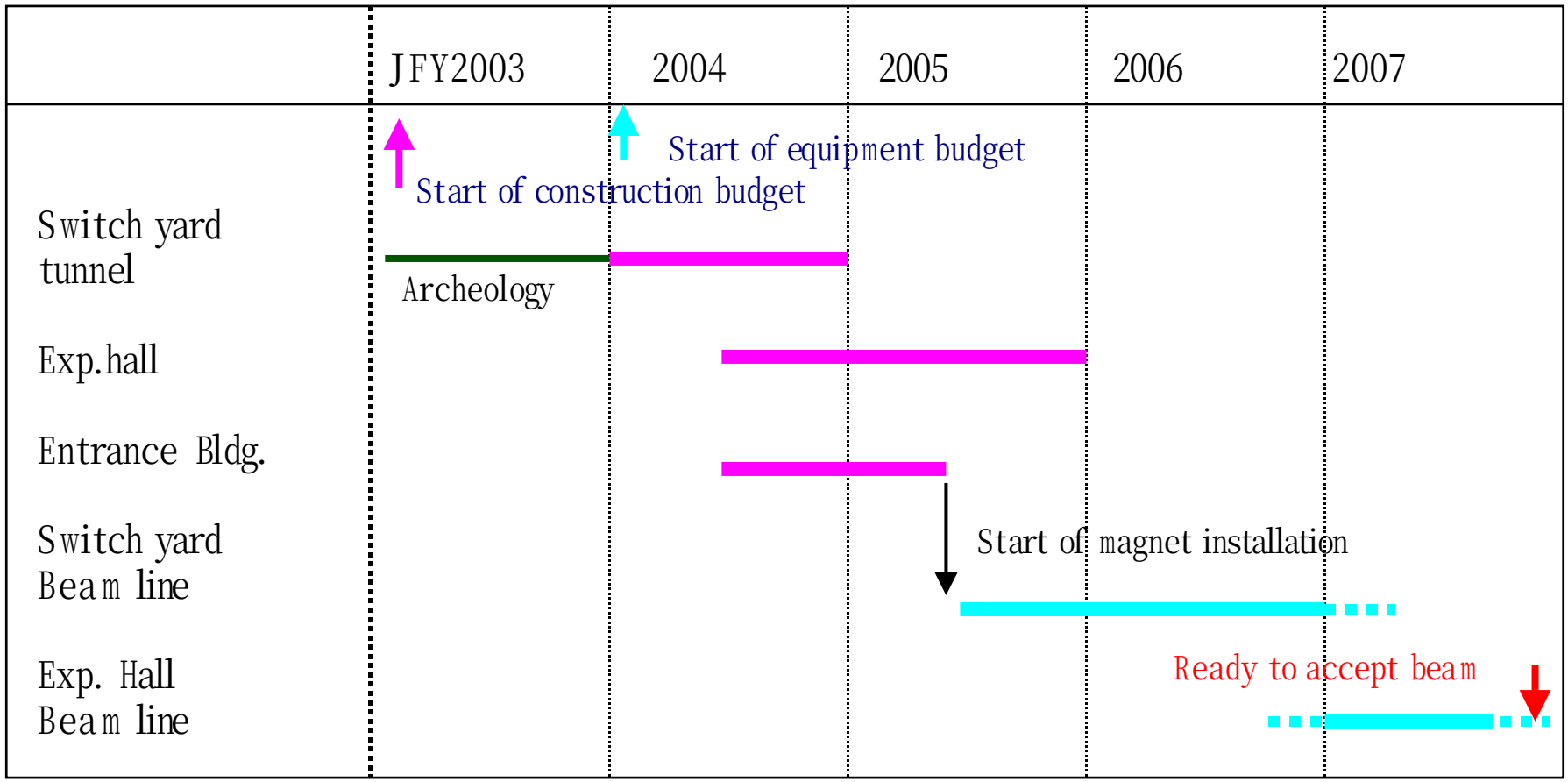
- A possible option of beamline layout in Phase1



- Shielding design
  - possible to accommodate all the requested beam lines
  - but not at the same time

Construction schedule (K-Hall)

(realistic estimate after the archeology study)



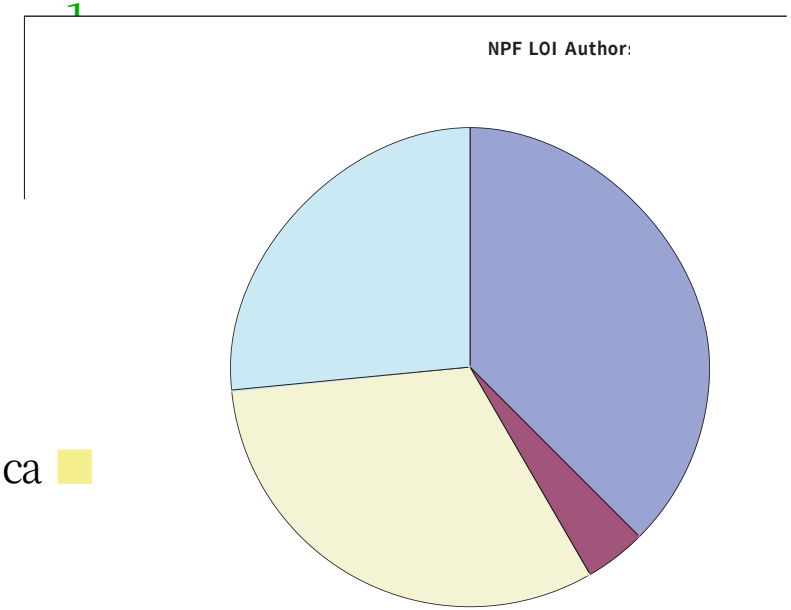
- Buildings will be completed by the end of JFY2005.
- Sometime in FY2004 magnet shipping from the KEK 12-GeV PS will start.
- How to shorten the beamline installation period is now under discussion.

NP02 workshop

- International Workshop on Nuclear and Particle Physics at 50 GeV-PS (NP02): (Sep.27-29 at Kyoto University)
  - with about 200 participants (including 80 people from abroad)
- Five working sessions of:
  - Neutrino experiments
  - Kaon rare decay experiments
  - Muon rare decay experiments
  - Strangeness nuclear physics experiments
  - Nuclear/hadron physics experiments
- Beamline demand in Phase1 for: (in addition to a neutrino beam)
  - Medium p separate kaon beam for hypernuclear experiments
  - Low p separate kaon beam for stopped beam experiments
  - Neutral K_L beam for a rare decay experiment
  - Primary beams for nuclear/hadron experiments

Letter of Intent

- Announce of LoI call : July 2002
- Thirty LoI's were submitted by the end of December 2002 :
  - Strangeness nuclear physics 7
  - Nuclear/hadron physics 7
  - Kaon decay physics 5
  - Muon physics 3
  - Neutrino physics
  - Future facilities
- More than 450 authors from all over the world.



Experimental Facility Committee

- Nuclear / Particle Physics Facility Committee (pre-PAC) was formed.
  - the first meeting is scheduled on March 22.

- The task of the committee will be:
  - Advice on facility construction
  - Advice on beamline installation
  - Approval of Day-1 experiments

- The issues in the first meeting will be:
  - the mechanism how to evaluate LoI's
  - concept of the facility design
  - hearing of the neutrino facility proposal

- The second meeting will be in late spring.

Committee members

- Committee members including three from abroad are:

Taku Yamanaka	(Osaka Univ)	Makoto Oka	(Tokyo Inst Tech)
Takayoshi Ohshima	(Nagoya Univ)	Yasuhiro Okada	(KEK)
Takaaki Kajita	(Univ of Tokyo)	Jun Imazato	(KEK)
Kenichi Imai	(Kyoto Univ)	Yoshishige Yamazaki	(JAERI)
Hideto En'yo	(RIKEN)	Tomofumi Nagae	(KEK)
Daniel R. Marlow	(Princeton Univ)	Kazuhiro Tanaka	(KEK)
Jen-Chieh Peng	(Univ of Illinois)	Takashi Kobayashi	(KEK)
Jacques Arvieux	(IPN-Orsay)	Koji Yoshimura	(KEK)

High energy physics : 4
Nuclear physics : 4
Particle and nuclear theory : 2
Project team : 6

Miscellaneous

- KEK IPNS Research Planning Committee worked out 50 GeV-PS physics in detail and submitted a report to the IPNS director.
  - KEK Report 2002-11 (January 2003) [in Japanese]
- Users Association will be formed soon based on the LoI author list.
  - About 450 people
- We are thankful to SLAC, CERN, CEA(Saturne) for delivering used magnets.
  - More from LANL and BNL?
- The schedule of magnet shipping from the KEK 12-GeV PS is now under discussion.

Summary

- Design of the facility and R&D of beam elements are going on further in 2003.
- Construction budget for NP hall will start in FY2003 for civil engineering and buildings, and in FY2004 for equipments.
- We will do our best to complete the K hall facility by the end of FY2006+α with α<12 months.
- However, no budget yet for experiments.
- Hopefully the budget for the neutrino facility will be approved this year.