LoI to J-PARC PAC

Masashi Yokoyama

Department of Physics, Graduate School of Science

The University of Tokyo

Section and editors

main text ~50 pages??

1. Worldwide neutrino physics landscape in ~2020
   - Nakaya-san

   ~5 pages?

2. Hyper-Kamiokande detector
   - Hide Tanaka

   10-15 pages each for 2.-5.?

3. J-PARC accelerator and neutrino beam
   - TBA, from KEK/J-PARC

4. Near detectors and expected systematics
   - Mark Hartz

5. Physics sensitivity
   - Yokoyama

+ additional authors & reviewers for each section
(under discussion with editors+α)

1. Introduction

Section editor: Nakaya-san

Nunokawa-san (theory)?
Kuze-san?
Jean-Michel?
Mauro Mezzetto?

all TBC

1. General introduction of neutrino oscillation
    1. Current situation, θ_{13}, …
2. Landscape in ~2020
    1. Expected results from T2K, NOvA, reactor,
    2. Other planned experiments: LBNE, LBNO, …
3. Positioning Hyper-K in the landscape

2. Hyper-Kamiokande detector

Section editor: Hide Tanaka

1. Site, cavern, tank
2. Water system
3. Photosensor
4. Electronics/DAQ
5. Calibration
6. Expected performance
    1. Basic performance with HK software
7. Summary table of physics other than T2HK

1-2 pages each for 2.-5.

3. J-PARC accelerator and neutrino beam

Section editor: T. Ishida (KEK)

1. Current performance of J-PARC/ν beamline
2. Prospects of power increase and expected performance
    1. Before start of HK
    2. During operation of HK

Baseline is 0.75~1MW, possibility for >MW? (to be discussed w/ acc. and beamline group)

3. Neutrino beam flux and uncertainties

4.Near detectors

Section editor: Mark Hartz

1. Requirements/goals of Near Detectors
2. Near Detectors
    1. Site, design, performance

- T2K ND280 detector (+Possible upgrade)
- 2km detector
- nuPRISM

5. Physics sensitivity

Section editor: Yokoyama

1. Sensitivity update
    1. Assumption of systematic uncertainties
        - Current baseline: "ultimate" uncertainties from T2K
            - Go over the current T2K systematics and discuss what error can be reduced and how much
    2. Results
2. Combination with atmospheric neutrino

Timeline

- Deadline of submission: Apr. 14, 12:00 (JST).
- Draft must be ready by end of Feb.
- Then, contents/text will be internally reviewed and polished in Mar.
  - Minor update/correction can be done, but main contents are expected to be finalized at the end of Feb.

- Template LaTeX file is in preparation
  - To be distributed to section editors this week
  - Repository is being prepared at Kamioka
- Deadline of the first draft: Feb. 21 (Fri)
  - May have a editor's meeting in between

Letter of Intent:

A Long Baseline Neutrino Oscillation Experiment Using J-PARC and Hyper-Kamiokande

Author list goes here

Institution list goes here

(Dated: January 28, 2014)

Abstract

This is a LoI of T2HK experiment.