

Roadmap for the international, accelerator-based neutrino programme

The ICFA Neutrino Panel

Overview and orientation:

- Contents and purpose:
 - Mandate:

ICFA constituted nuPanel in 2013 with the mandate to ...
 - This report:

The roadmap for the international, accelerator-based neutrino programme presented in this document was drawn up after peer-group consultation presented in our initial report and is in line with the conclusions drawn in the initial report.
 - Use:

Discussion document to inform second round of consultation with peer group and first round of consultation with stakeholder groups.
 - Vision:

Publish (arXiv) summer 2015, discussion meeting with peer group and stakeholders winter 2016. Period of revision and further consultation/discussion. Revised for presentation at Neutrino 2016.
- Neutrino physics and accelerator-based programme:
 - Neutrinos least known, BSM, origin of Universe (!).
 - Accelerator programme unique contributions at the heart of the programme.
 - Critical issues and contributions unique to the accelerator based programme.
- Programmes, facilities, experiments and R&D:
 - Sentence level what experiments are done where and why;
 - Evolution of programme in medium term; again where and why at sentence level.
 - Requirement to maintain development of capability and programme of R&D.
- Roadmap for a balanced programme of discovery:
 - Scientific balance/breadth of programme to address critical issues.
 - Large vs small; short timescale vs medium and long.
 - Regional balance; R&D and innovation in beams and detectors.
- Orientation:
 - Introduction: lays out the scientific programme.
 - One section per LBL/oscillation, SBL/sterile, supporting programme/cross section & hadroproduction, RD programme.
 - Roadmap.
- Question:

Do we want to attempt a survey? E.g. investment or personnel by region?

1 Introduction

- Particle physics as pursuit of fundamental understanding of matter and Universe;
 - Set context by referring to the other recent roadmaps and strategy pronouncements.

- 45 • Neutrinos as part of the particle-physics endeavour;
 - As in, or modified from, our initial report.
- Accelerator-based programme as a part of the whole:
 - Unique contribution of the accelerator-based part (as in or developed from our initial report);
 - Scale of investment, lead-time for discovery;
 - Need for cooperation and collaboration that exploits regional facilities, strengths and ambitions;
 - 50 – Hence this roadmap.

1.1 The roadmap

- How it has been drawn up:
 - Community consultation, initial report etc.
- This roadmap document presents:
 - 55 – Facts on timescales (and cost?) of running and planned experiments correct as far as we know at time of publication;
 - Recommendations (?? or do we pull a punch and use a weaker word ??);
- Objectives:
 - Maximise scientific gain/discovery potential from global investment;
 - 60 – Provide a programme with scientific output/discovery potential in the near and medium term;
 - Identify R&D programme required to deliver the capability to build on the short- and near-term discovery programmes.
- Intended use of roadmap document:
 - Document views of panel based on process above;
 - 65 – Basis for further peer-group consultation, discussion with stakeholders.

1.2 The survey

It would be natural at this point to have a couple of “pie charts” or something that indicates the size of the community we’re talking about and the present division of activity amongst scientific or development areas.

We discussed this in the past and shelved it. Should we do it? What is our timetable?

70 2 Long-baseline neutrino oscillation programme

2.1 Overview

2.2 Scientific goals

2.3 Facilities and experiments

2.4 Institutes

75 2.5 Milestones

2.6 Recommendations?

A The ICFA Neutrino Panel

ICFA established the Neutrino Panel with the mandate [?]:

80 *To promote international cooperation in the development of the accelerator-based neutrino-oscillation program and to promote international collaboration in the development a neutrino factory as a future intense source of neutrinos for particle physics experiments.*

The membership of the Panel agreed by ICFA at its meeting in February 2013 is shown in table ???. The terms of reference for the panel [?] may be found on the Panel's WWW site [?].

Table 1: Membership of the ICFA Neutrino Panel.

Name	Institution
J. Cao	IHEP/Beijing
A. de Gouvêa	Northwestern University
D. Duchesneau	CNRS/IN2P3
R. Funchal	University of Sao Paulo
S. Geer	Fermi National Laboratory
S.B. Kim	Seoul National University
T. Kobayashi	KEK
K. Long (chair)	Imperial College London and STFC
M. Maltoni	Universidad Automata Madrid
M. Mezzetto	University of Padova
N. Mondal	Tata Institute for Fundamental Resarch
M. Shiozawa	Tokyo University
J. Sobczyk	Wroclaw University
H. A. Tanaka	University of British Columbia and IPP
M. Wascko	Imperial College London
G. Zeller	Fermi National Accelerator Laboratory