WP3-NEu2012
Neutrinos for Europe in 2012

V. Palladino
Univ & INFN Napoli
EuCARD plenary
14 Apr 2010

- Networking Activity (continuing BENE,
  along with EUROnu & LAGUNA FP7 DS)
- within Integrating Activity EuCARD (continuing CARE)

- 2012 remains our goal, after
  - CERN ν strategy Workshop October 09
  - ECFA ν session November 09 CERN
  - CERN proton complex strategy retreat Jan 10, Chamc
  - SPC ν Panel report to Council Mar 10
- Eu context of options
  - CNGS+
  - EUROnu
- World wide context of options

as latest revised, yesterday,
in our first NEu2012 annual meeting

NEu2012
Neutrinos for Europe in 2012

Council dixit

…… *to be in position to define the optimal neutrino program*

…………………… …..   *in around 2012*

The European strategy for particle physics

Particle physics stands on the threshold of a new and exciting era of discovery. The next generation of experiments will explore new domains and probe the deep structure of space-time. They will measure the properties of the elementary constituents of matter and their interactions with unprecedented accuracy, and they will uncover new phenomena such as the Higgs boson or new forms of matter. Long-standing puzzles such as the origin of mass, the matter-antimatter asymmetry of the Universe and the mysterious dark matter and energy that permeate the cosmos will soon benefit from the insights that new measurements will bring. Together, the results will have a profound impact on the way we see our Universe; *European particle physics should thoroughly exploit its current exciting and diverse research programme. It should position itself to stand ready to address the challenges that will emerge from exploration of the new frontier, and it should participate fully in an increasingly global adventure.*

General issues

1. European particle physics is founded on strong national institutes, universities and laboratories and the CERN Organization; *Europe should maintain and strengthen its central position in particle physics.*

2. Increased globalization, concentration and scale of particle physics make a well coordinated strategy in Europe paramount; *this strategy will be defined and updated by CERN Council as outlined below.*

Scientific activities

3. The LHC will be the energy frontier machine for the foreseeable future, maintaining European leadership in the field; *the highest priority is to fully exploit the physics potential of the LHC, resources for completion of the initial programme have to be secured such that machine and experiments can operate optimally at their design performance.* A subsequent major luminosity upgrade (SLHC), motivated by physics results and operation experience, will be enabled by focussed R&D; *to this end, R&D for machine and detectors has to be vigorously pursued now and centrally organized towards a luminosity upgrade by around 2015.*

4. In order to be in the position to push the energy and luminosity frontier even further it is vital to strengthen the advanced accelerator R&D programme; *a coordinated programme should be intensified, to develop the CLIC technology and high performance magnets for future accelerators, and to play a significant role in the study and development of a high-intensity neutrino facility.*

5. It is fundamental to complement the results of the LHC with measurements at a linear collider. In the energy range of 0.5 to 1 TeV, the ILC, based on superconducting technology, will provide a unique scientific opportunity at the precision frontier; *there should be a strong well-coordinated European activity, including CERN, through the Global Design Effort, for its design and technical preparation towards the construction decision, to be ready for a new assessment by Council around 2010.*

6. Studies of the scientific case for future neutrino facilities and the R&D into associated technologies are required to be in a position to define the optimal neutrino programme based on the information available in around 2012; *Council will play an active role in promoting a coordinated European participation in a global neutrino programme.*

7. A range of very important non-accelerator experiments take place at the overlap between particle and astroparticle physics exploring otherwise inaccessible phenomena; *Council will seek to work with ApPEC to develop a coordinated strategy in these areas of mutual interest.*

NEu2012 planning for 2009 and perspectives for later

2009-10

setting up

April
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr

2 kickoffs { SPC … road map committee
EUROnu I

Non-LHC Workshop

Major progress defining
CERN participation

UNIGE postdoc

EPS HEP

NuFact09

WIN09

1-3
SPC ν Workshop

NNN09

PECFA

Chamonix !!!!!!

SPC ν Report to Council

1st Neu2012 yearly meeting at EuCARD 2010

CERN fellow ?

now — **Apr10** — **Apr11** — **Apr12** — **Apr13**

Intermediate
Reports

Final
Reports

Neu2012 planning for 2010 and perspectives for later

2010-11

Proceedings ν Workshop NEu2012 postdoc, F. Dufour

CERN fellow

LAGUNA

Take full stock of SPC & Chamonix

CERN management
Council Strategy Secretariat
ECFA

April
May
Jun — EUROnu II — Neutrino 2010, Athens
Jul — ICHEP, Paris — LAGUNA ends
Aug
Sep — **NNN10, Toyama**
Oct — **NuFact10, Mumbai**
Nov
Dec
Jan
Feb — **2nd "SPC ν Workshop"?**
Mar
Apr — **2nd Neu2012 yearly meeting at EuCARD 2011**

First iteration of road map

now — **Apr11** — **Apr12** — **Apr13**

Intermediate Reports (Apr11)

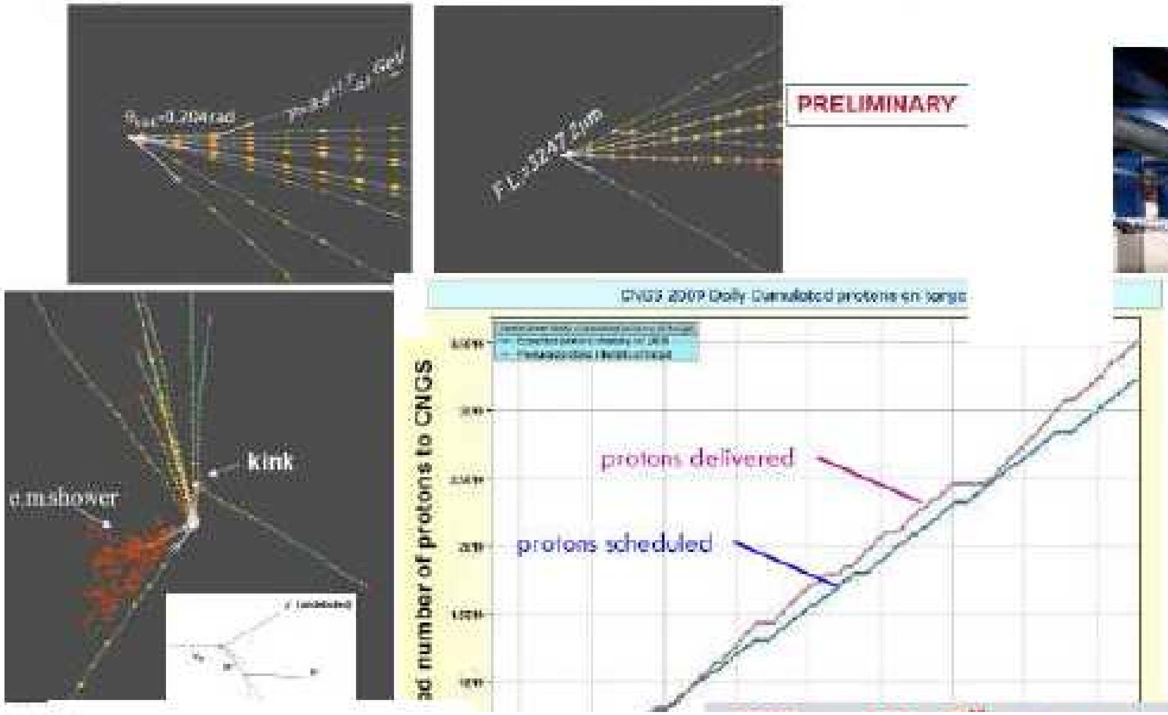
EUROnu II ends

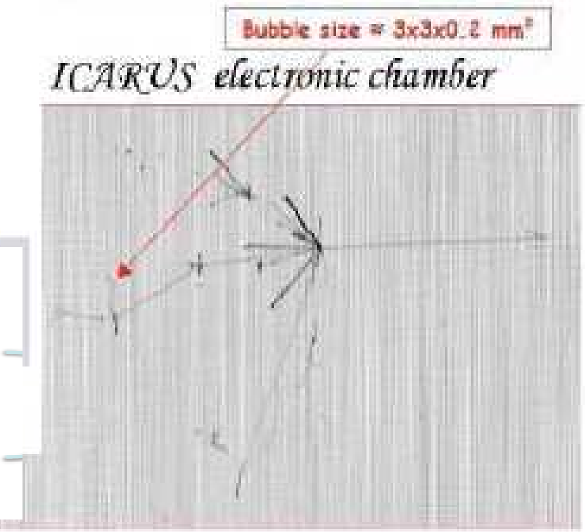
Final Reports (Apr13)

Neutrino Physics in Europe - present

- CERN operates one of the three long baseline neutrino beams: **C**ERN **N**eutrinos to **G**rand **S**asso – **CNGS**

Topological and kinematical analysis - first charm-like event





~1ν_τ observed interaction in OPERA for $2 \cdot 10^{19}$ pot

→ Run 2008: $1.78 \cdot 10^{19}$ pot

→ Run 2009: $3.52 \cdot 10^{19}$ pot

→ Run 2010 expected: $3.8 \cdot 10^{19}$ pot

CNGS Timeline

EuCARD

Repairs & improvements in the horns

Additional shielding
Reconfiguration of service electronics

Target inspection

Civil engineering works for the drains & water evacuation

2006
Commissioning
Leak in the reflector cooling circuit, damaged stripline cable

2007
Beam commissioning with high intensity
Radiation effects in ventilation system electronics

2008
Physics run
Damaged target magazine rotation bearings

2009
Physics run
MTE tests
H3 in the drains

2010
Physics run

Operating a high-intensity beam facility is always very challenging !!

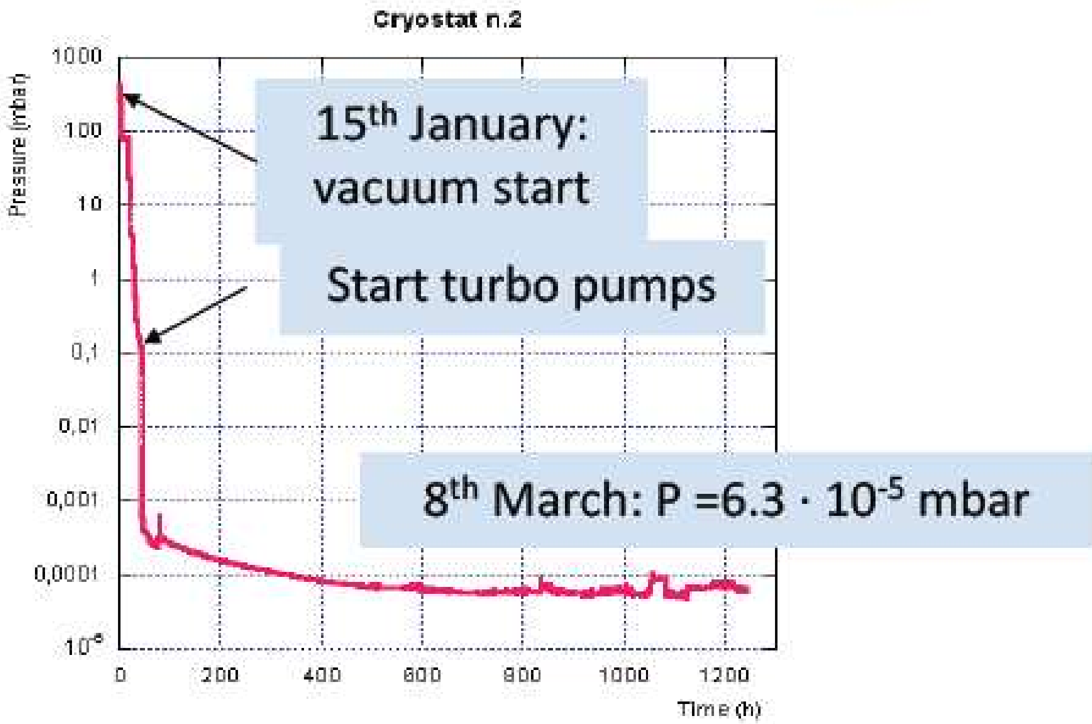
ICARUS – T600 Status

- Cryogenic plant
- Readout electronics
- Infrastructures

→ Completed in 2009

2010:

- vacuum test successful



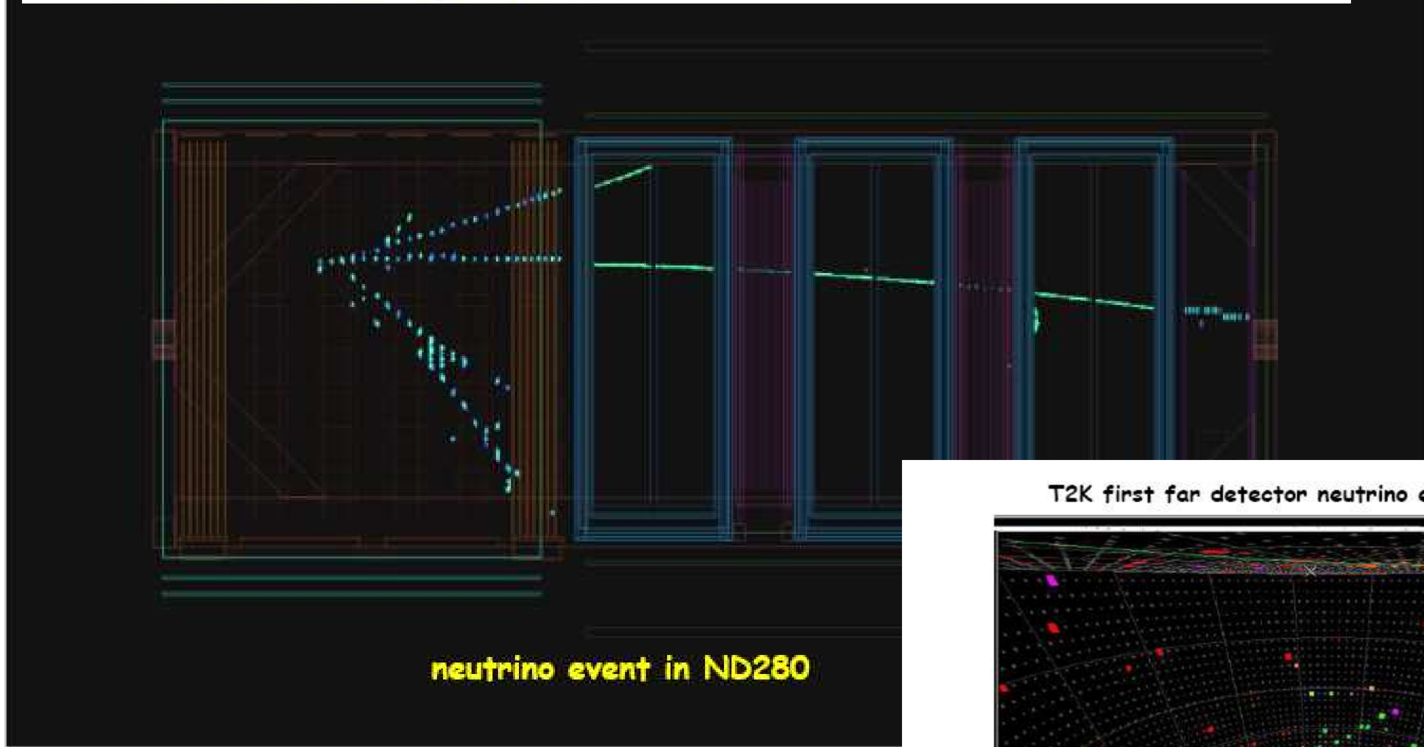
Cooling and filling phase starting

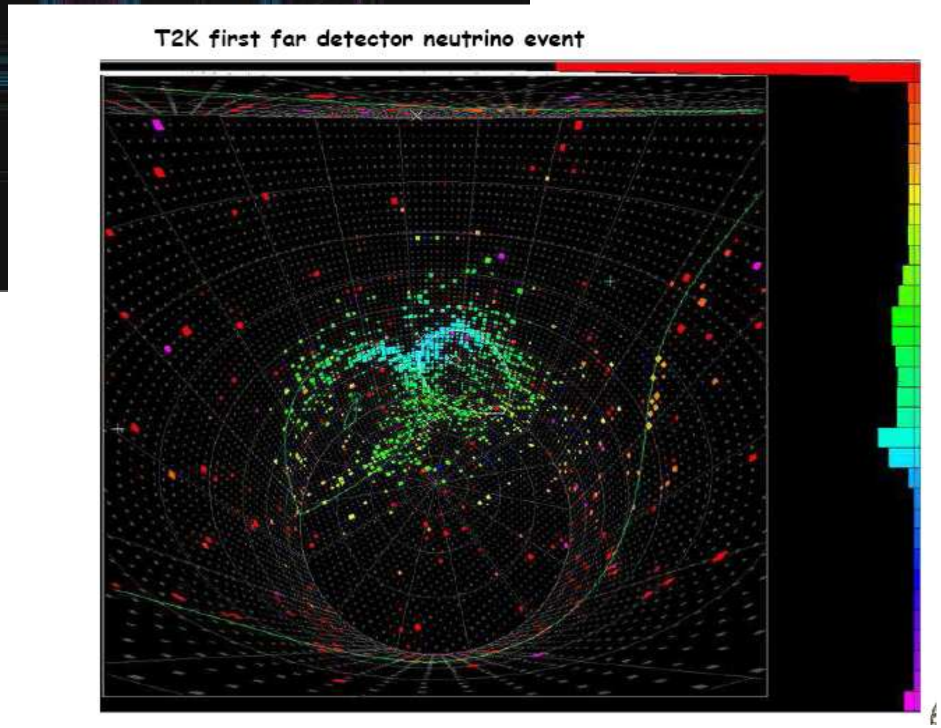
→ Operational in May 2010

!!!!!

Neutrino Physics in Europe - present

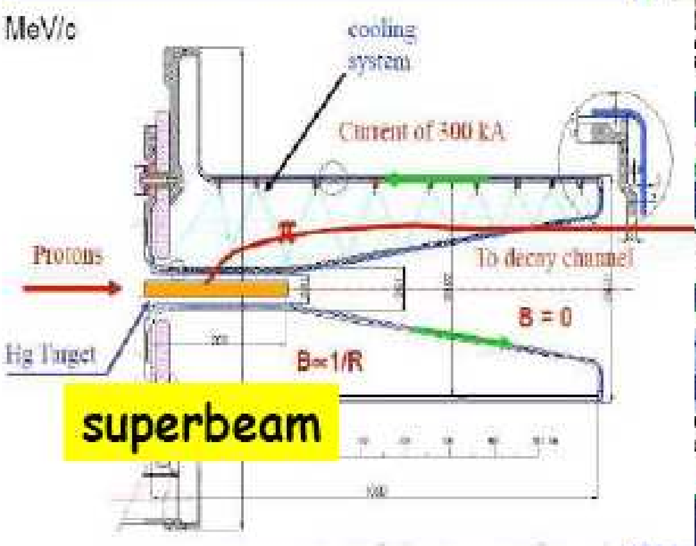
- Significant European participation in the T2K long baseline neutrino beam experiments

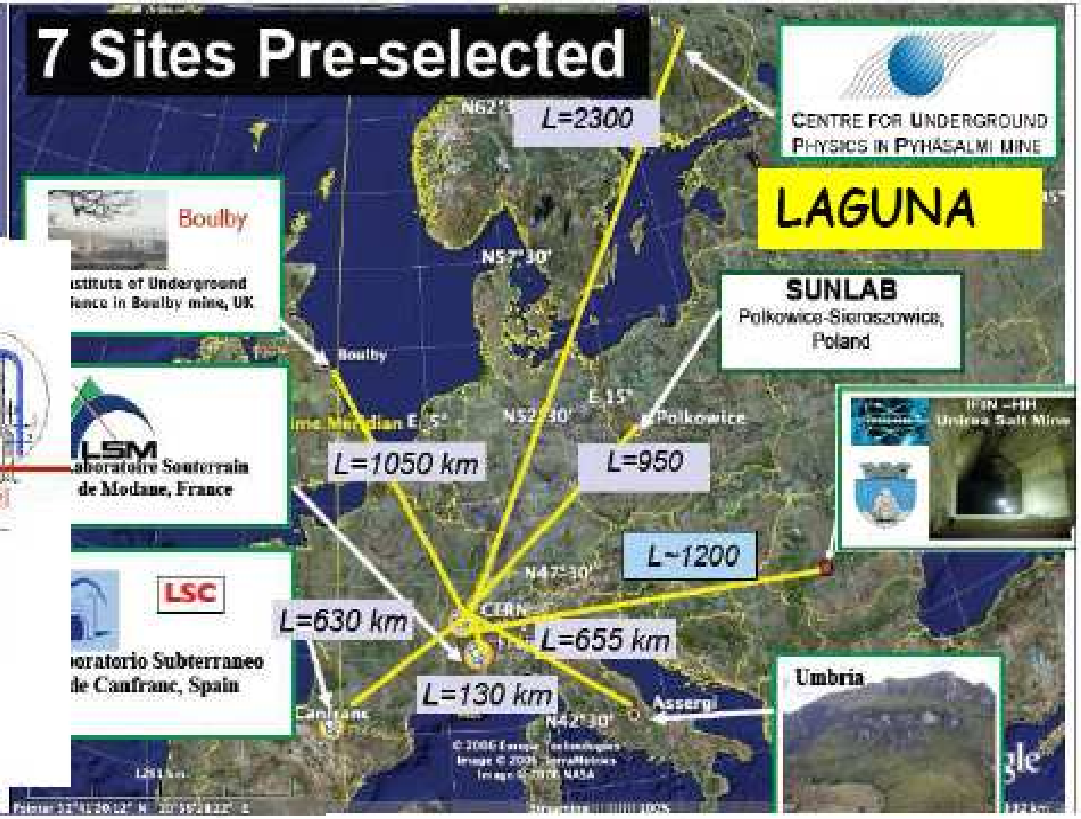


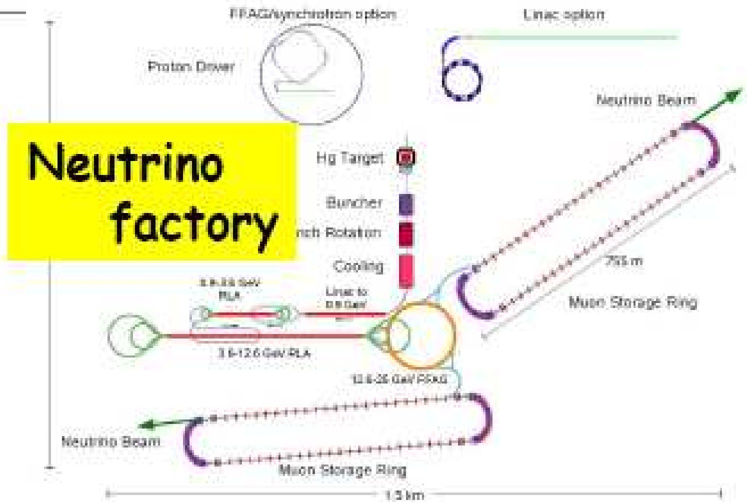


Also: DCHOOZ, MINOS,
KATRIN, ββ0ν expts, and more

Neutrino Physics in Europe – Future?







Bertolucci's
conclusions
of the CERN
ν Strategy Workshop

ν specific (Europe)

- Reach a shared decision on the next step(s).
- Narrow down the choice of the far detector location
- Narrow down choices for new accelerators.
- Keep stepping up synergies in Europe and abroad for accelerator and detector R&D.

ν specific (@CERN)

- Specify the LHC injector consolidation/upgrade and its coupling to ν roadmap.
  - **Strategy retreat end November**
- Increase support for coordinated R&D, within reality
- An oscillation experiment/R&D at PS?
  - LOI being submitted shortly to the SPSC
  - A possible way to attract local physicists?
- Keep working on accelerator R&D, contributing to the world effort.

Bertolucci

In summary

We will need

- Flexibility
- Preparedness
- Visionary global policies

.....and

Choices

Euro

CHOICES

-- while we are asked to narrow down options, the devil keeps inventing new schemes!

-- high Q beta-beam
-- superbeam from PS2
-- low energy neutrino factory

most die quickly, but maybe one will live..?

We have two main coherent and powerful 'possibilities'

1. A low energy superbeam + beta beam (^{6}He ^{18}Ne in SPS) aimed at a very large Water Cherenkov d = 125 - 300km (T and CP violation)

2. Neutrino Factory with >=20 GeV muons aimed at (2-5000&7000km) Magnetized Iron Neutrino Detector (MIND) + fine grained magnetized detector (TASD, LArg, MECC) for tau detection

Both require high-power SPL

Which is better/cheaper, competitive in time/performance?
Physicist can ~estimate performance but cost requires professional help!

The Report of the SPC ν panel to Council 16/3/10

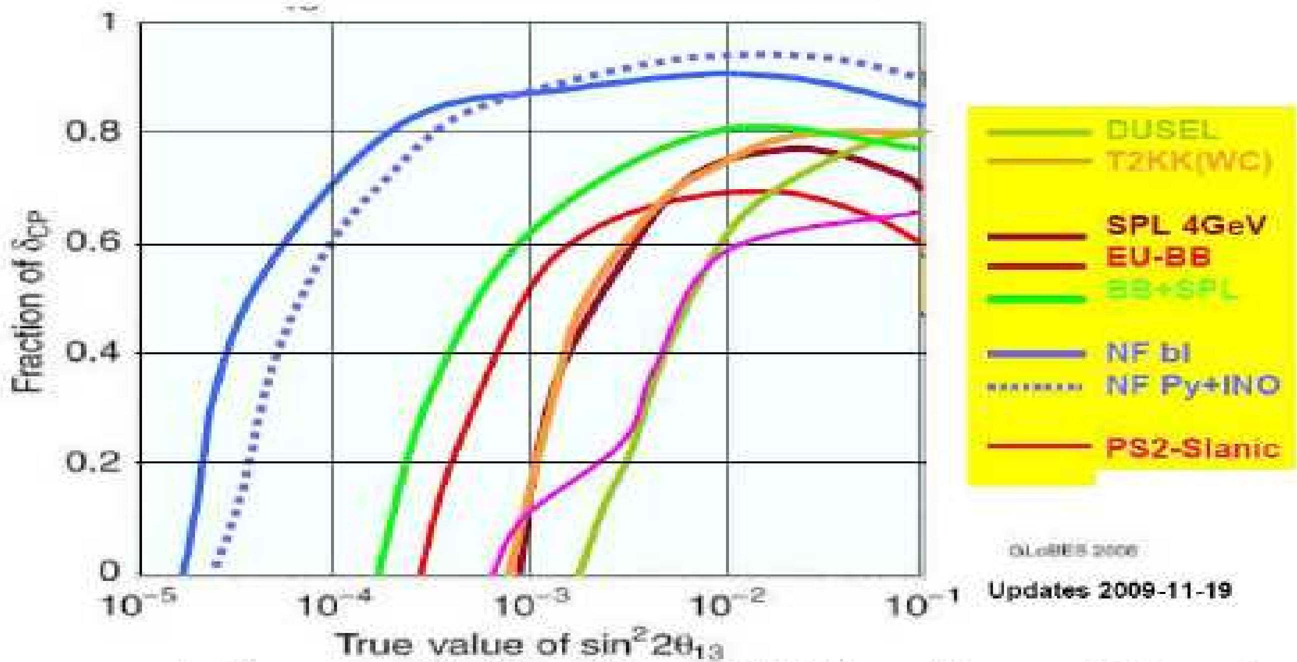


Figure 2 A representative compilation of sensitivities of some future long baseline projects. Here the fraction of δ_{CP} where CP violation can be observed at 3 standard deviations is plotted as a function of θ_{13}. T2KK: T2K 1.66 MW beam to 270 kton fid volume Water Cherenkov detectors in Japan (295km) and in Korea (1050 km); DUSEL: a WBB from Fermilab to a 300 kton WC in Dusel (1300km); SPL 4 GeV, EU-BB and BB+SPL curves stand for the CERN to Fréjus (130km) project; NF bl is the Neutrino Factory baseline (4000km and 7000km baselines) and NF Py+INO represents the concrete baseline from CERN to Pyhasalmi mine in Finland (2285 km) and to INO in India (7152 km); PS2-Slanic is a preliminary study of an experiment at 1500km based on an upgrade of PS2 to 1.66MW and a 100kton Liquid Argon TPC **(references added in footnotes).**

NB **PPEG:** IDS ←ISS ←BENE

General recommendations

- CERN, as the European particle physics organisation, should play an important role in the process leading to the definition and implementation of the European strategy with respect to a neutrino physics programme. To do so CERN must create stronger links with the European neutrino community.

- Re-establishing neutrino groups in PH and BE departments would, if it is practicable, be a positive step in this direction.
However, the SPC recognizes that the desire to set up such groups has to be balanced against the many other competing demands on CERN's resources.

- The workshop on the European Strategy for Future Neutrino Physics, organized at CERN on October 1-3, was very successful. Regular meetings of this type, organized under the auspices of CERN and ECFA, could help in the integration of the European neutrino community and in increasing the role of CERN in the strategic global planning for neutrino physics.

Recommendations for specific support from CERN to enable strategic decisions

- Costing. Support for providing comparable costing of the superbeam, beta beam and neutrino factory options is needed within the EUROnu/IDS-NF framework. In Europe the expertise required for such a comprehensive work is only available from CERN.

- Radioprotection and general safety issues. The development at CERN of a high power target facility, preferably with international collaboration from other laboratories would be a major asset, not only for the neutrino programme but also for the increasing number of areas where high power proton beams are needed.

- Completing key R&D programmes. For the Beta Beam, it is vital to demonstrate the feasibility of producing sufficient ^{18}Ne. For the Neutrino Factory continued contributions to the MICE experiment are important to demonstrate ionization cooling in a timely fashion for 2012/2013.

- R&D for future neutrino detectors. This has been taking place in Europe for some time and support from CERN, e.g. by supplying test beams, would be highly beneficial.

Long term strategy planning

- It is unrealistic to expect to have a high intensity neutrino source of any kind in Europe before early 2020's.

- By this time it is reasonable to expect that there will be many years of operating and upgrading Superbeams in Japan and in the USA. This should be closely followed.

- Thus if Europe is to be competitive in the 2020's it should concentrate on the R&D for a new intense source, i.e. the Neutrino Factory or the Beta Beam. It would be advisable to systematically review the progress and prospects of this work.

OUTLINE

- Scenario 1: new LHC injectors
- Scenario 2:
  - Linac4
  - Consolidation & upgrade of the other injectors
  - R & D for high power SPL
- Comments

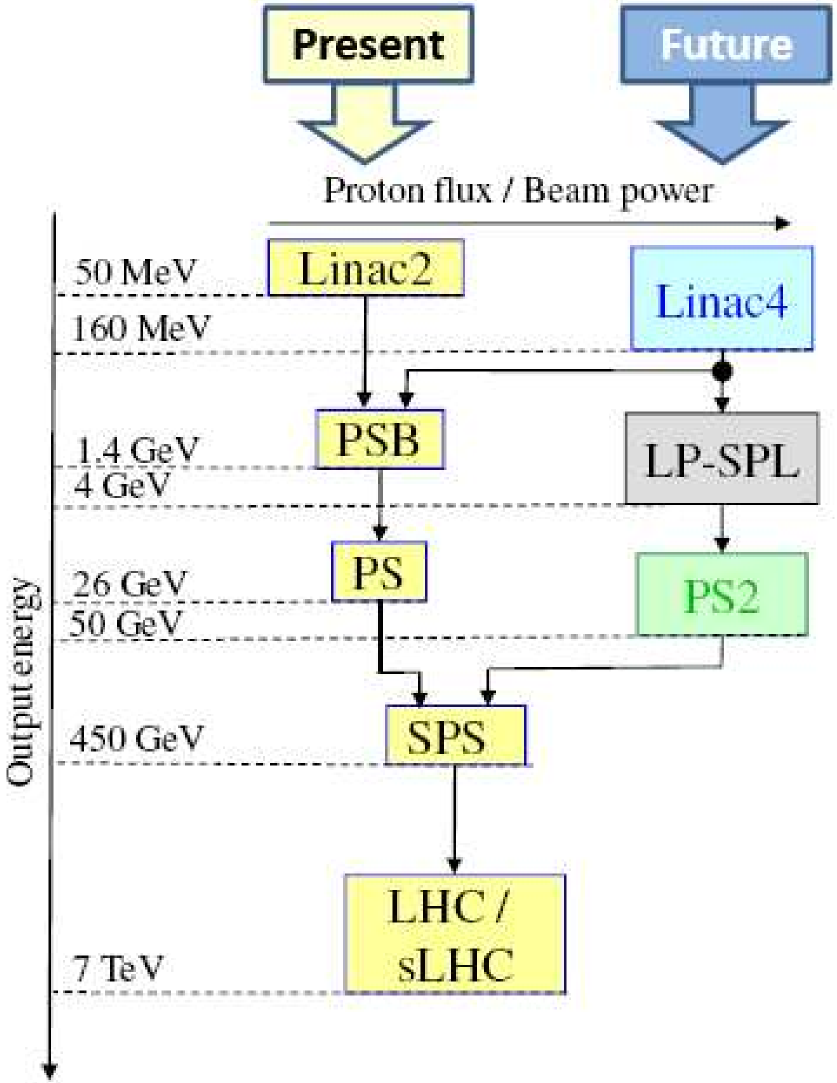
If (May 3 to the SPC!) …….more than ever

Accelerator Neutrinos
High intensity particle and nuclear physics
……………………..

would have to stand on its own feet

Description

Scenario 1: New LHC injectors



LP-SPL:
Low Power-Superconducting Proton Linac (4 GeV)

PS2:
High Energy PS (~ 5 to 50 GeV – 0.3 Hz)

sLHC:
"Super-luminosity" LHC (up to 10^{35} $cm^{-2}s^{-1}$)

Consolidation & upgrade of the other injectors
(1/2)

Scenario 2

Motivation

- Consolidation is mandatory for reliable operation until ~2020 (earliest date of availability of new injectors)
- Cost of consolidation + new injectors is excessive
- Upgrades can be implemented while consolidating…

Description

Upgrade, replace or add equipment to:

- increase the maximum energy of the PSB up to ~ 2 GeV
- transfer and inject at 2 GeV in the PS
- make the PS and SPS capable to accelerate and manipulate beam with much higher brightness and longitudinal density...

No need for LP-SPL nor PS2

R & D for a high power SPL
(1/3)

Scenario 2

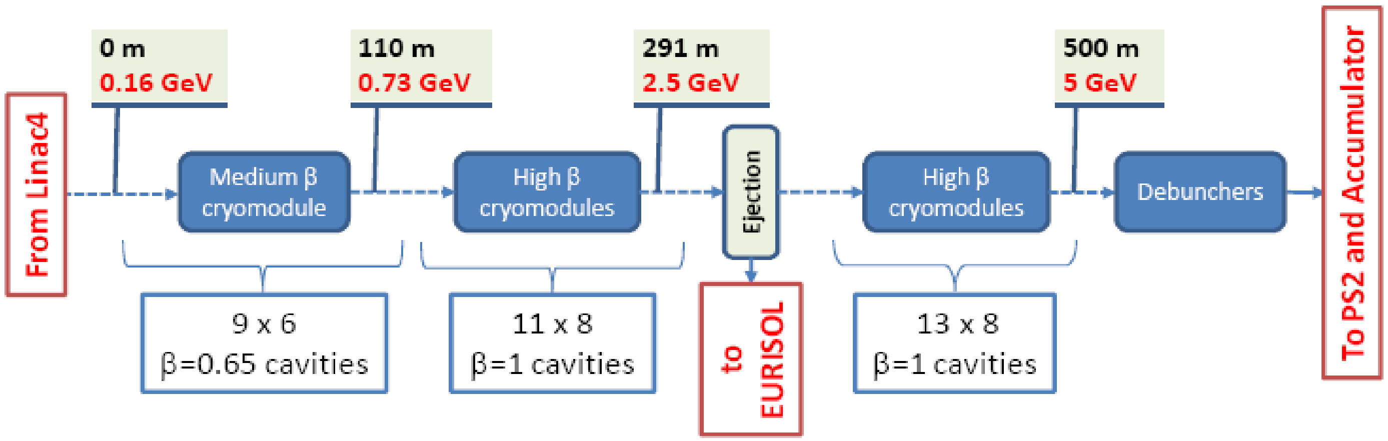
Motivation

- Preserve potential for some alternative physics programmes (Neutrinos, RIB)
- Preserve possibility of new injectors at long term (e.g. DLHC option…)
- Update CERN competences in superconducting RF
- Synergy with other applications outside of CERN

Description

- Focused on high beam power
- R & D only (no work on integration / civil engineering / environmental impact)

SC-linac [160 MeV → 5 GeV] with ejection at intermediate energy



Length: ~500 m

Impact on neutrino physics at CERN

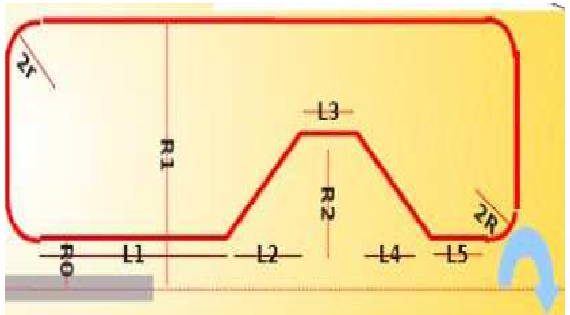
Comments

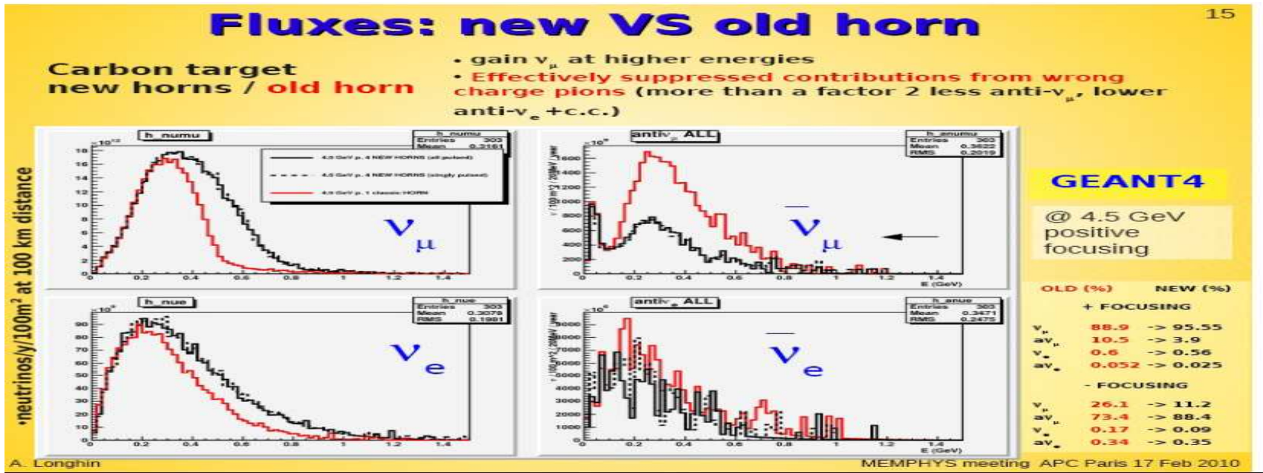
	Scenario 1	Scenario 2
PS ν experiment	~ OK	? To be studied
Conventional ν beam from SPS	Potential for ~3 x the CNGS flux	Potential for ~1.5 x the CNGS flux
Conventional ν beam from PS2	OK up to 400 kW of beam power	
Conventional ν super beam from SPL	Needs upgrade of LP-SPL + accumulator + target	Needs construction of SPL + accumulator + target
β beam	OK for production of ^{6}He Needs another driver for ^{18}Ne	Needs construction of driver(s) for production of ^{6}He and ^{18}Ne
ν factory	Needs upgrade of LP-SPL + accumulator / compressor + target + muon accelerator complex…	Needs construction of proton driver (e.g. SPL-based) + target + muon accelerator complex…

Highlights from EUROnu/Superbeam

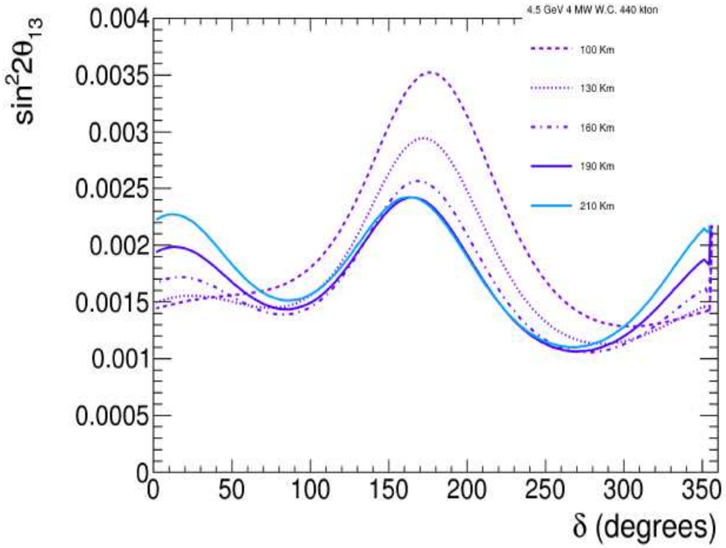
M. Zito

- SPL optimized horn (SPL 5 GeV, 4 MW, 440kt, 2+8 years)





- SPL various baselines



- SPL and PS2 with various LAGUNA baselines (PS2 50 GeV, 2.4MW NOVA focussing, optimization to be done, work in progress)

The Beta Beam - SPL Super Beam synergy

$\nu_e \rightarrow \nu_\mu$

and ν_e !!

A joint program towards a common detector

MM, Nucl. Phys. Proc. Suppl. **149** (2005) 179.

$\nu_\mu \rightarrow \nu_e$

and ν_μ !!

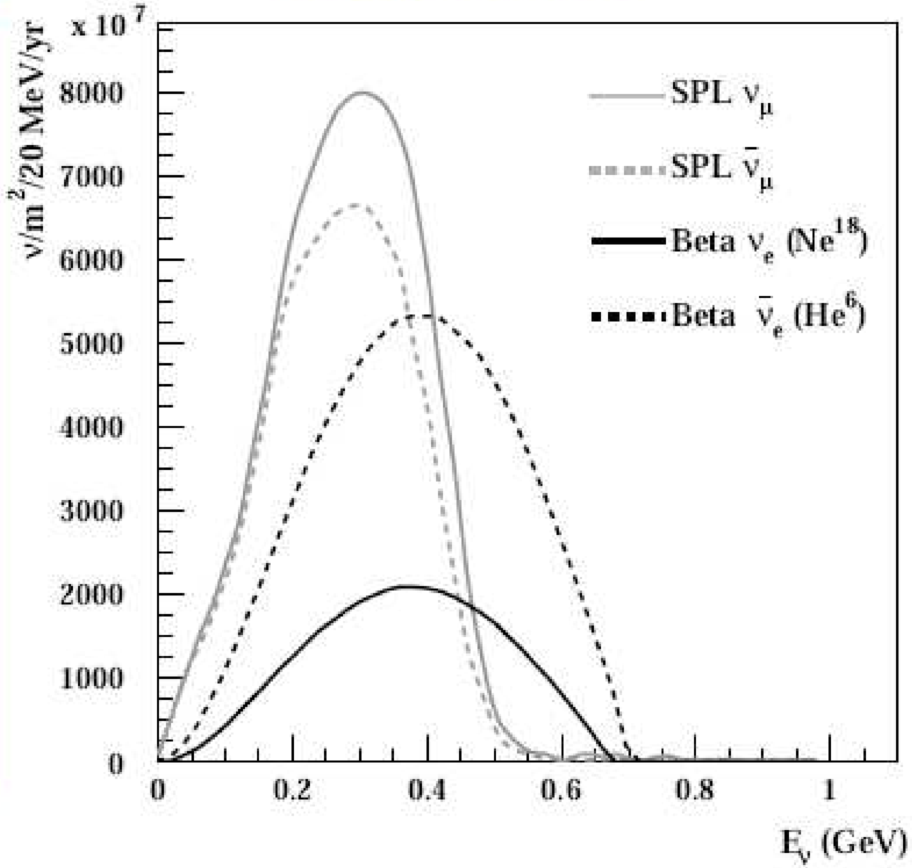
A Beta Beam has the same energy spectrum than the SPL SuperBeams and consumes 5% of the SPL protons.

The two beams could be fired to the same detector ⇒ LCPV searches through CP and T channels (with the possibility of using just neutrinos).

Access to CPTV direct searches.

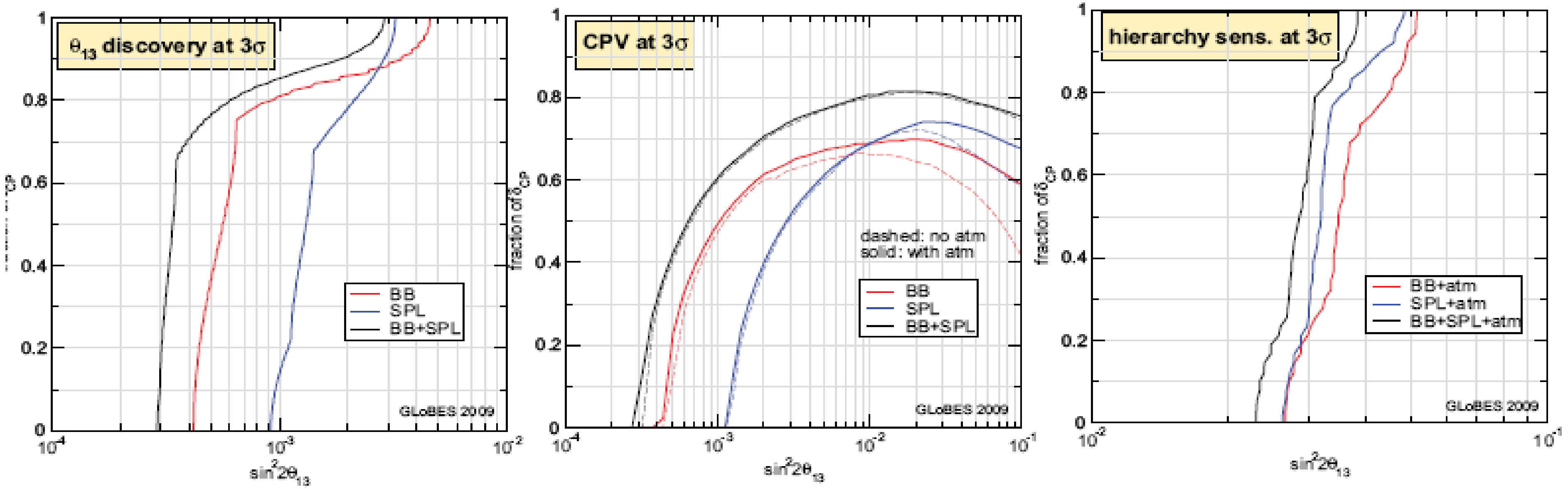
Cross measurement of signal cross section in the close detectors

Yearly Fluxes



Updated sensitivities of SPL, BB and SPL+BB

Courtesy of T. Schwetz, 5% systematics, the ISS curves were too pessimistic



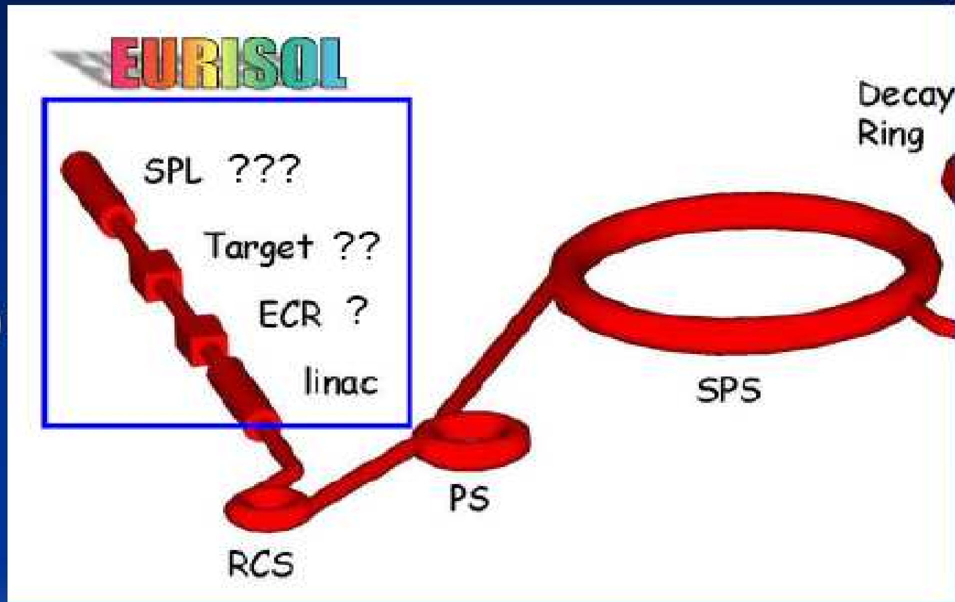
fed into SPC ν Panel Report

Technical progress on betabeam

"CERN based" Layout

Production of $\bar{\nu}_e$ & ν_e :
3(.3) 10^{13} ^{6}He/s
2(.1) 10^{13} ^{18}Ne/s
out of the primary target
(Final report, FP6 EURISOL-DS)

To deliver
1.1 10^{19} ν
And
2.9 10^{19} $\bar{\nu}$
over 10 years



$^{19}F(p,2n)^{18}Ne$: threshold 16MeV, peak at 1.6mbarn @ 30MeV, 0.8mbarn @ 45 MeV (M. Loiselet)

P. Valko from Bratislava is working (6 months) on ^{18}Ne production.

The goal is to provide a proposal with as close as possible technologies which are realistic. In particular, 100's kW rather than MW target dimensioning.

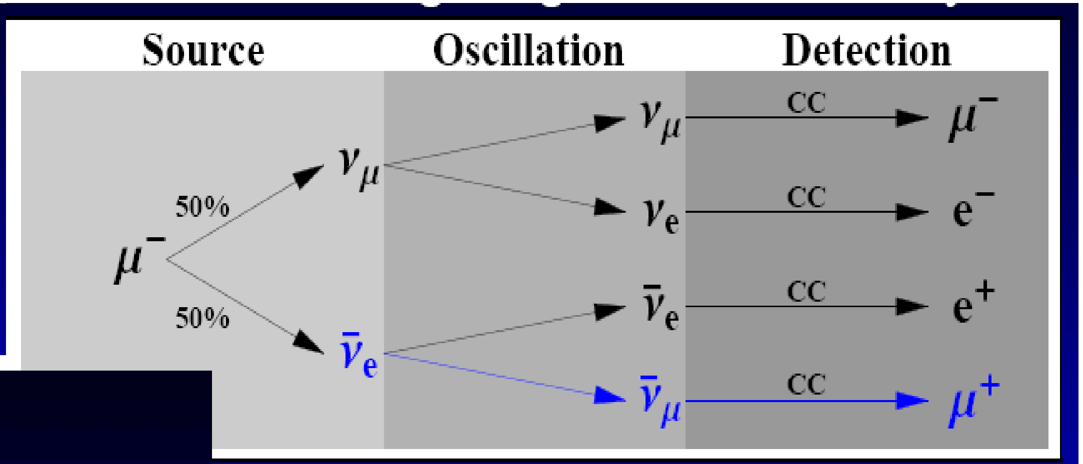
From present 1st order estimates, we need 6 mA, 160 MeV proton Linac, 700kW target loop technology, and ~ 8 years of operation. This will certainly still evolve. Some experimental data are absolutely required.

Other future options for 8B studies will be envisaged at CERN-ISOLDE. Physics users from ISOLDE have some interest.

Neutrino Factory
The Physics Program

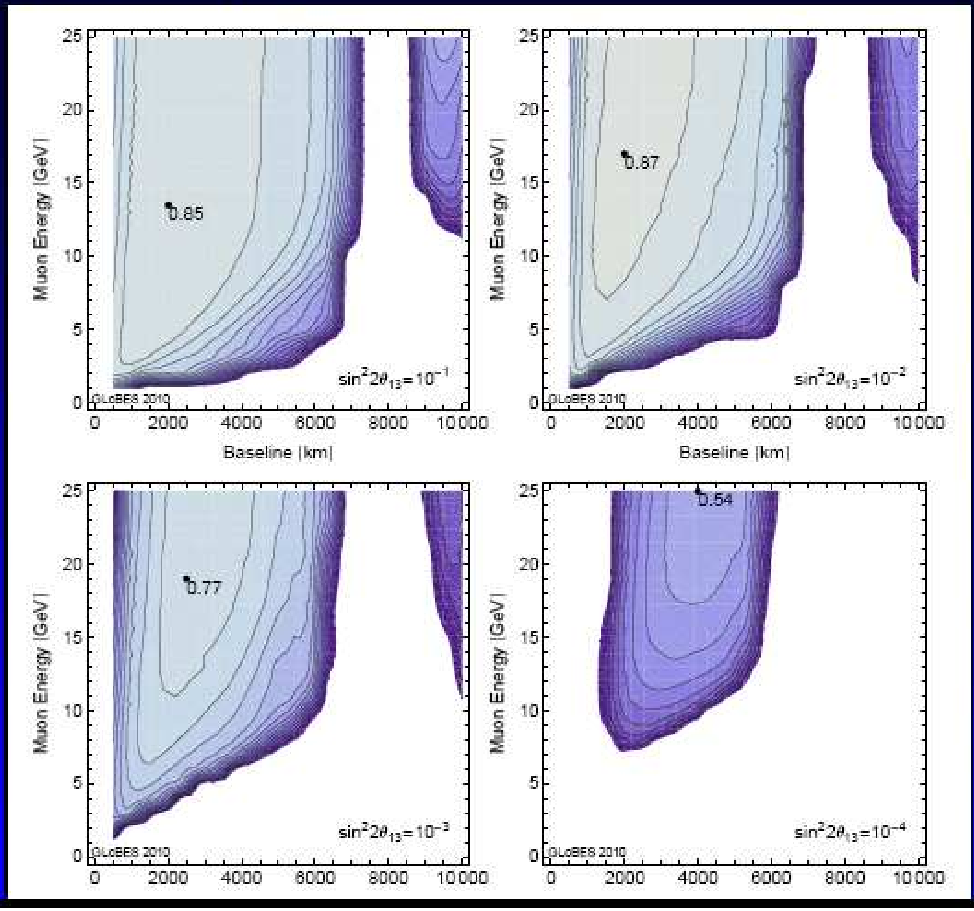
Patrick Huber

Virginia Tech



Ideal detector

CP violation



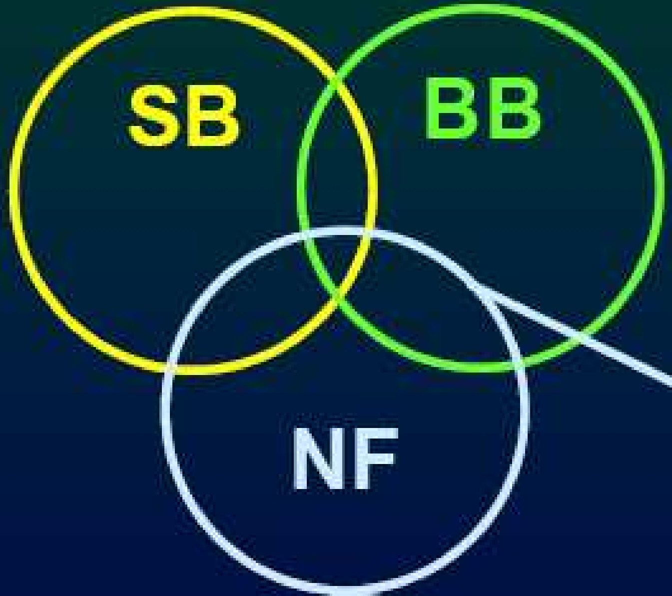
- 25 GeV muon energy
- 2 MIND detectors, 50 kt each
- Baselines 4000km and 7500km
- Results shown a 3σ CL

- IDS-NF baseline currently under review
  - Inclusion of near detector(s) improves systematics
  - Larger far detector
  - Lower energy threshold

EUROnu and the IDS-NF

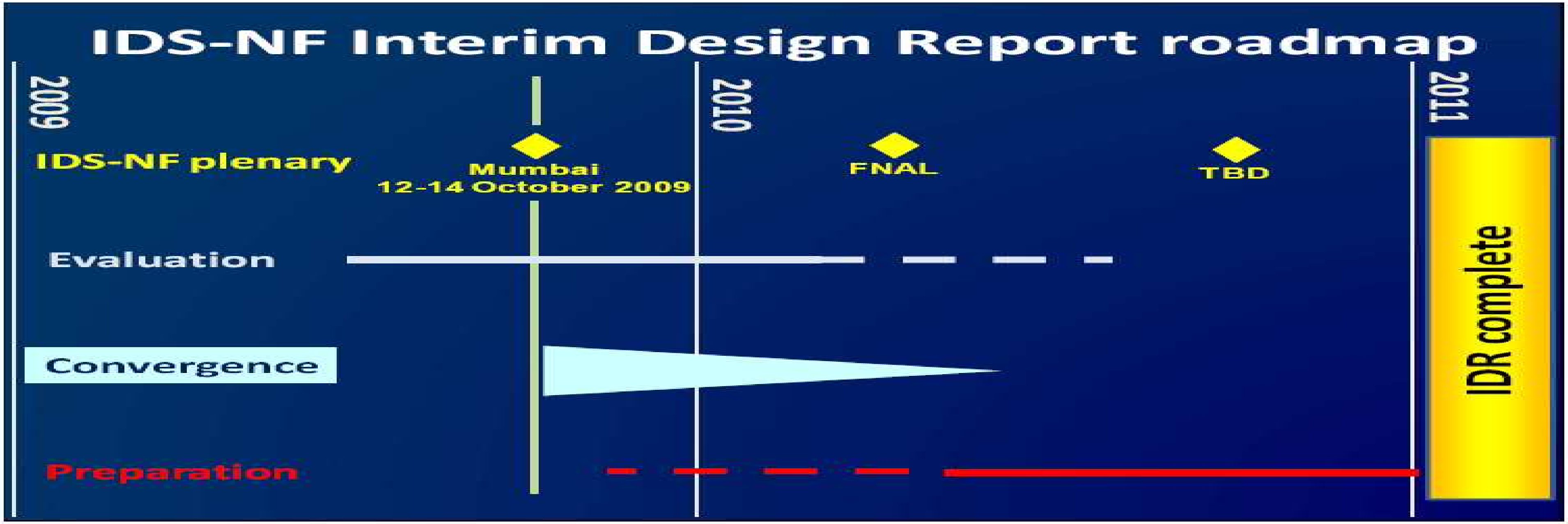
- EUROnu *is* the European contribution to the IDS-NF

EUROnu

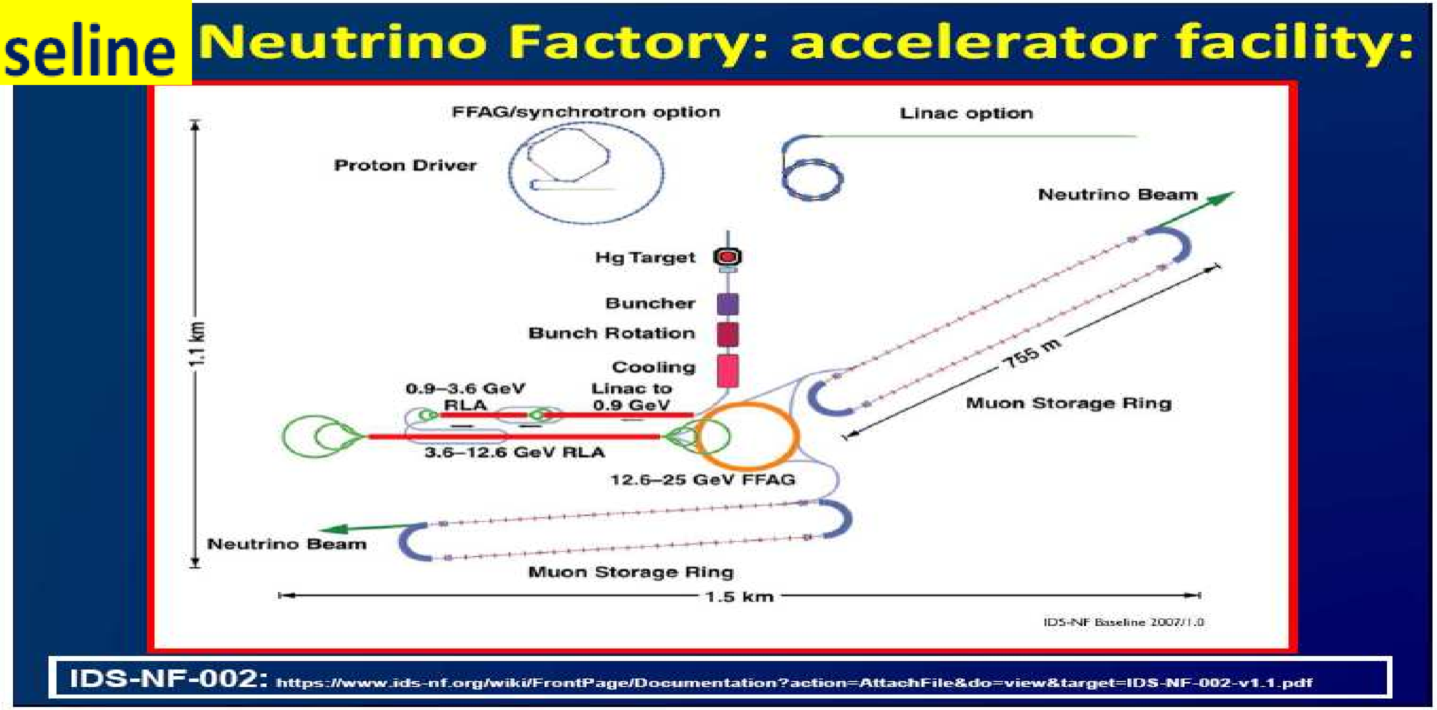


IDS-NF

- The Americas
  - Canada
  - USA
- Asia
  - Japan
  - India
  - (in the future: China …)
- Europe
  - EUROnu



The IDS-NF baseline



as of Apr 10, 2010
IDS meeting FNAL

- The IDS-NF baseline established and, so far, robust
  - Alternatives to the baseline, addressing particular issues (e.g., Low Energy Neutrino Factory), are under discussion

Proton driver:

CERN SPL
Project-X

Parameter	Value	Comment
Beam power	4 MW	Production rate
Beam energy	5-15 GeV	Optimum pion production
Bunch length	1-2 ns	Pion/muon capture

Target/capture:

Parameter	Value	Comment
Jet velocity	20 m/s	Reformation of jet
Field at i/p	20 T	Pion collection
Field at exit of capture	1.75 T	Pion focusing

Muon front-end:

D. Neuffer

Parameter	Value	Comment
E-spread after P.R.	10%	Subsequent accel.
Freq. after P.R.	201.25 MHz	
Emittance at exit	7.4 mm rad	Subsequent accel.

Mitigation of RF gradient risk:

Muon acceleration:

	E_{fin} (GeV)	Comment
Pre-accel. Linac	0.9	Change in γ
RLA I	3.6	Switch-yard congestion
RLA II	12.6	Switch-yard congestion
FFAG	25.0	Large acceptance, use of RF

Pre-accelerator, RLA I & II:

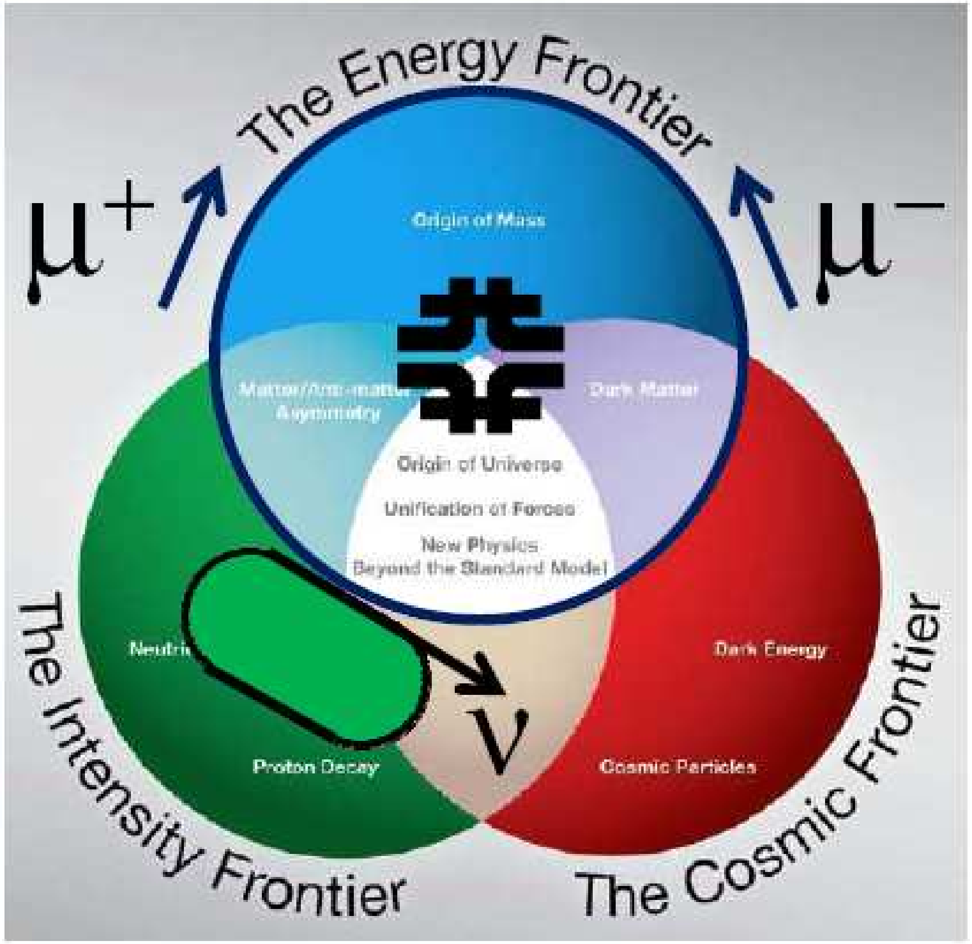
Muon FFAG:

Storage rings:

M. Apollonio, D. Kelliher

Parameter	E_{fin} (GeV	Comment
Type	Race track	Triangle as backup
N_{decays} /b.l. /yr	5×10^{20}	Baseline flux (10^{21} / yr total)
Min, bunch spacir	100 ns	Event separation

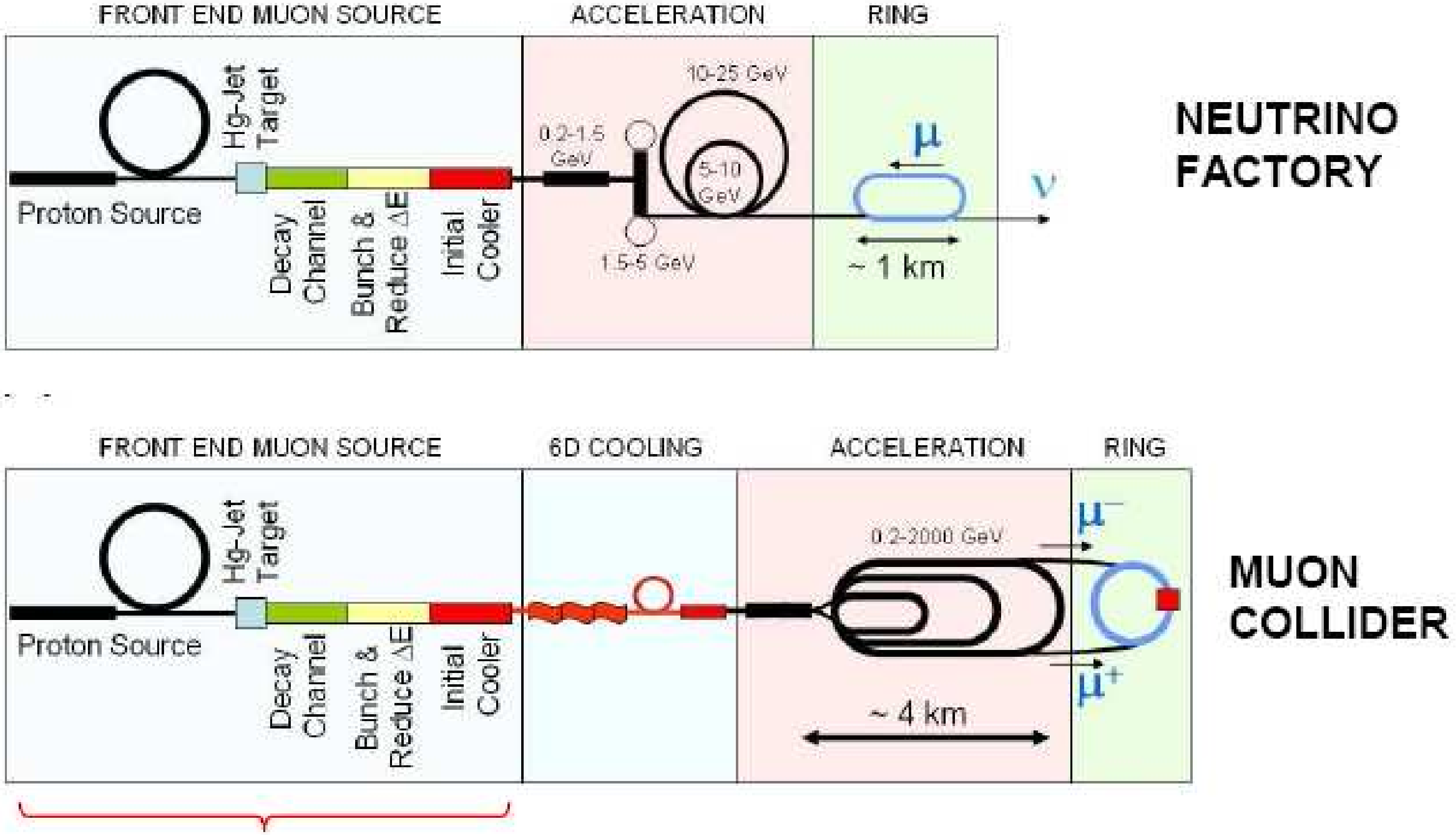
U.S. Muon Accelerator R&D



Muon Accelerator Program (MAP)

MUON
COLLIDER
&
NEUTRINO
FACTORY
R&D

Neutrino Factory c.f. Muon Collider



In present MC baseline design, Front End is same as for NF

Achievements - Technologies



MUCOOL Test Area built at FNAL for ionization cooling component testing:
5T magnet, RF power at 805MHz & 201MHz, LH2 handling capability, 400MeV beam from linac.

42cm ∅ Be RF window (LBNL)

HCC magnet tests (FNAL – TD)


201 MHz RF cavities for MuCool & MICE R&D (LBNL et al.)


HTS cable R&D (FNAL – TD)

NFMCC, MCTF and MAP

- Muon Collider (MC) & Neutrino Factory (NF) R&D has been pursued in the U.S. by:
  - -Neutrino Factory and Muon Collider Collaboration (NFMCC) since 1996
  - -Fermilab Muon Collider Task Force (MCTF) since 2006

- The NFMCC & MCTF R&D programs have been coordinated by the "Muon Collider Coordination Committee" comprising the NFMCC+MCTF leadership

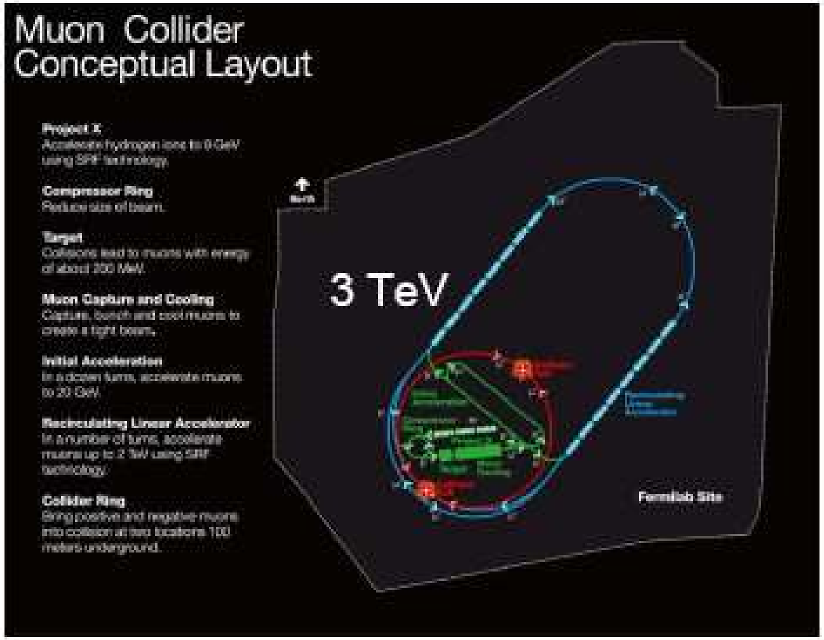
- The NF part of the R&D has been internationalized, and is being pursued within the context of the International Design Study for a Neutrino Factory (IDS-NF) which aspires to deliver a Reference Design Report by ~2013.

- In the U.S. the NFMCC + MCTF activities are being merged into a new national organization (MAP) to pursue MC & NF R&D, hosted at Fermilab.

- There is a muon-based vision for Fermilab's future that leads back to the energy frontier.

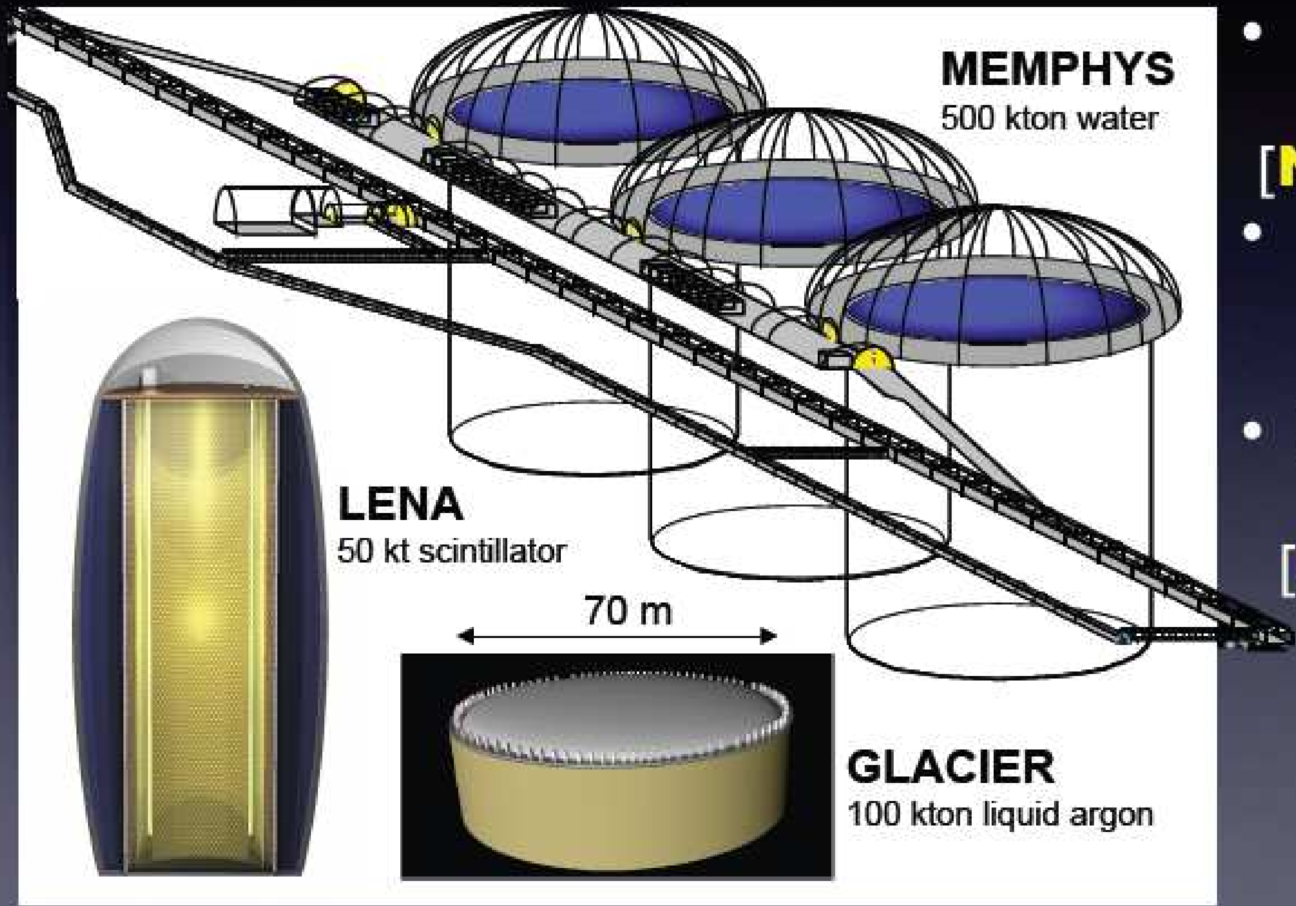
- Within the next 6-7 years we propose to find out whether a Muon Collider is feasible, and roughly what it would cost (cost range), and contribute to the IDS-NF work (→ NF RDR).

- There is a new U.S. organization (MAP). The MAP proposal builds on past achievements, & is designed to do what is necessary to give Fermilab an attractive option if LHC results motivate a multi-TeV lepton collider.



LAGUNA detectors

- **Three complementary detector options**



- Water Cerenkov [**MEMPHYS**]
- Liquid scintillator [**LENA**]
- Liquid Argon TPC [**GLACIER**]

7 potential sites

LAGUNA at work (2008-2010)

Typical questions addressed

- assessment of strengths and weaknesses
- rock mechanics of caverns
- design of tanks in relation to sites
- overburden vs. detector options
- transport, access, delivery of liquids
- safety e.g. tunnel vs. mine
- environment e.g. rock removal
- relative costs

Site visits and meeting

- sites work together on common areas

Final report on European underground research infrastructure and its science

- Deliverable 1.2
- Content
  - Executive summary
  - Scientific arguments
  - Technical arguments
  - Political and environmental arguments
  - Preliminary cost estimates
  - Time schedule
  - Desired funding profile

– To be finalized and officialized at the next LAGUNA general meeting in April 27-29th 2010

LAGUNA-next ?

- Design Study (2-3 years)
  - Detailed design of underground infrastructure
  - In-situ rock investigation, detailed layout
  - Detailed design tank + infrastructure
  - Detailed detector design
  - Detailed costing
  - Detailed detector simulation & physics performance estimation
  - + any other relevant issue
  - etc.
- EC call in summer 2010 (deadline around Dec 2010 ?)
- The goal would be convergence
  - on a site, following the priority of LAGUNA-1
  - on a GLACIER and/or LENA deployment strategy

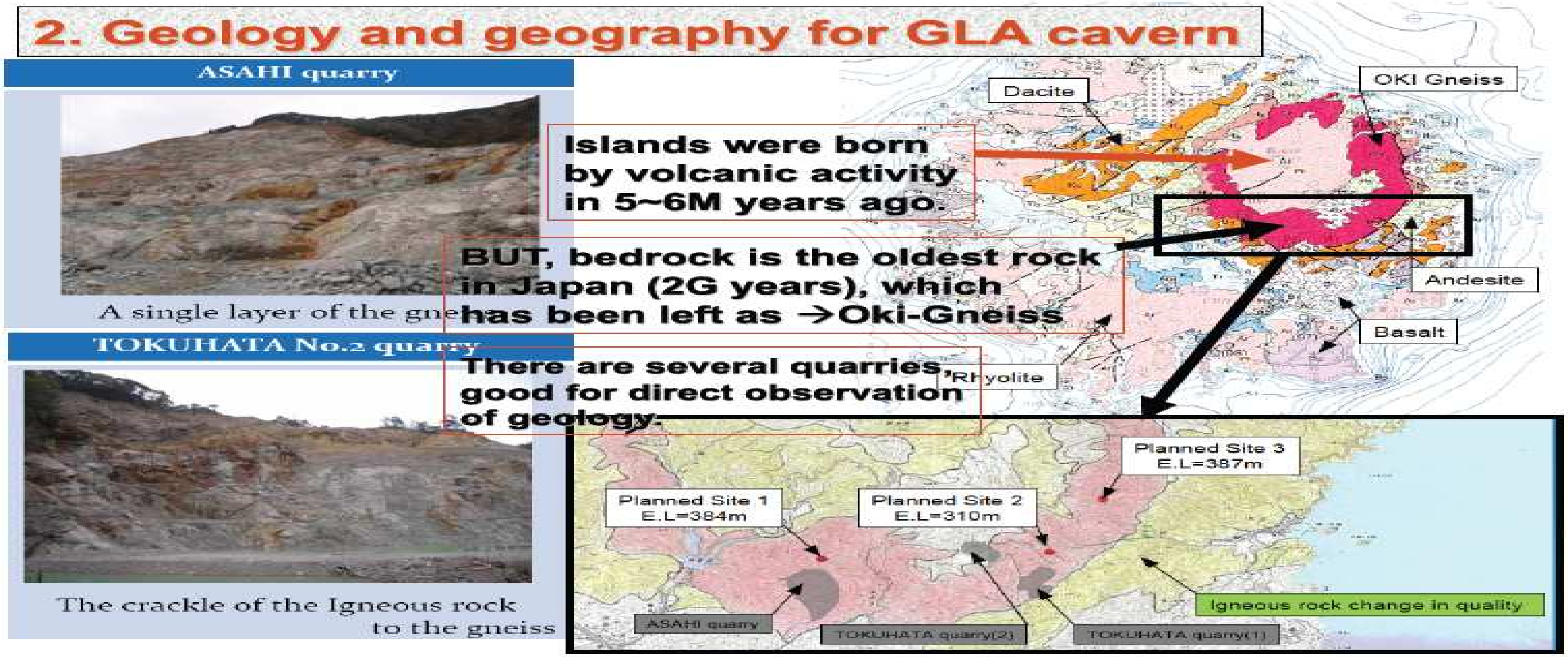
Detector possibilities: Liquid Argon TPC Report from GLA2010

Takuya Hasegawa (KEK)

The aim of the GLA2010

The aim of the workshop is to bring together researchers having common interest in realizing a giant neutrino observatory based on the liquid Argon time projection chamber technology combining next-generation searches for proton decay and neutrino physics with natural and artificial sources. The workshop will review the current worldwide efforts towards large liquid Argon detectors and aims at fostering collaborations on the medium and long time scales.

Eu, US, Japan



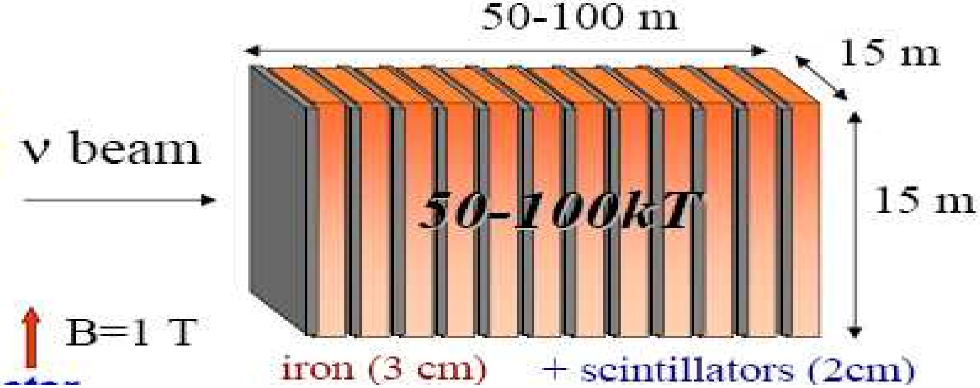
Solid Neutrino Detectors P. Soler

Magnetised Iron Neutrino Detector (MIND)

- Golden channel signature: "wrong-sign" muons in magnetised calorimeter (Cervera et al. 2000)

- Far detector (2000-7600 km) can search for "wrong-sign" muons in appearance mode

Magnetic Iron Neutrino Detector (MIND)

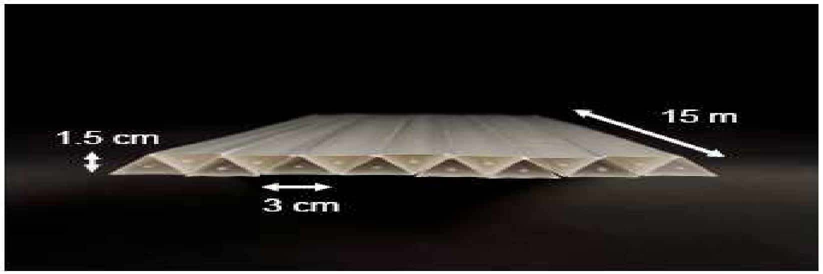


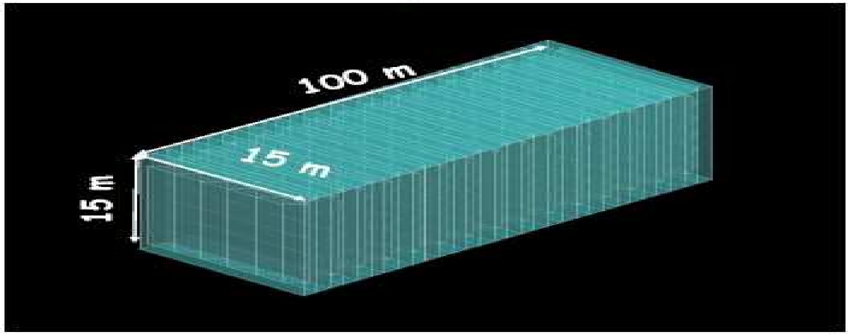
Totally Active Scintillating Detectors (TASD)

Possible improvement: Totally Active Scintillating Detector (TASD) using Nova and Minerva concepts

Ellis, Bross

- 3333 Modules (X and Y plane)
- Each plane contains 1000 slabs
- Total: 6.7M channels





- Momenta between 100 MeV/c to 15 GeV/c
- Magnetic field considered: 0.5 T
- Reconstructed position resolution ~ 4.5 mm

Reduction threshold: access second oscillation maximum and electron identification

Physics Possibilities of a PS ν beam
BEAM PROPERTIES AND LAYOUT

Outline

- The PS ν-beam – layout & beam parameters
- ν-R&D possibilities

R. Steerenberg, I. Efthymiopoulos – CERN

Possible neutrino experiment at CERN PS

most from AIDA neutrino meeting 17-18 March 2010
http://indico.cern.ch/conferenceDisplay.py?confId=87234

Alain Blondel. EUCARD meeting NEU2012 13 April 2010

A new search for anomalous neutrino oscillations at the CERN PS

P. Sala

C. Rubbia & C.

arXiv:0909.0355

after ν PECFA session Nov 09 at CERN

Possibility to form an ECFA review panel for the future European infrastructures for the neutrino oscillation experiments

Tatsuya NAKADA (ECFA Chair)
Ecole Polytechnique Fédérale de Lausanne (EPFL)

Neu2012 meeting, 13 April 2010 at RAL

The European Strategy Document update in 2012

Particularly important issue.

How to overcome disadvantages of the community driven activities for this process?

A possible contribution by ECFA to the solution is

An expert panel set-up by ECFA who reviews the scientific issues of the intermediate and final reports by the EUROnu and IDS-NF, and reports to ECFA.
Review reports will become publically available.

- Would this be welcomed by the community?
- Panel has an European mandate but should have an international composition!
- What is the relation with the other regions (US and Asia)?

Should we do more?

Time line

-First discussion: RECFA meeting in Moscow, Oct 2009
-Idea of setting-up a review panel presented by Ken Long: RECFA meeting in Brussels, Feb 2010, positive reaction
-Start contacting with neutrino communities for their reactions
-Start testing the reaction from the other regions
-If reactions are positive, presentation of a concrete plan: RECFA meeting in Sofia, May 2010
-Ask for an endorsement to set-up a review panel by Plenary ECFA in Frascati, July 2010
-If endorsed,
Nominate the panel members and chair for an endorsement by Plenary ECFA at CERN in Nov 2010

Neu2012 planning for 2010 and perspectives for later

2010-11

Proceedings ν Workshop NEu2012 postdoc, F. Dufour

CERN fellow

LAGUNA

Take full stock of SPC & Chamonix

CERN management
Council Strategy Secretariat
ECFA

April
May
Jun EURОnu II — Neutrino 2010, Athens
Jul ICHEP, Paris — LAGUNA ends
Aug
Sep **NNN10, Toyama**
Oct **NuFact10, Mumbai**
Nov
Dec
Jan
Feb
Mar
Apr

2nd "SPC ν Workshop"?

First iteration of road map

2nd Neu2012 yearly meeting at EuCARD 2011

now — **Apr11** — **Apr12** — **Apr13**

Intermediate Reports

Final Reports

EUROnu II ends

Thank you
for
your attention