M. Kordosky notes.

Friday Morning

Rob Plunkett – are we only discussing the far future? (+ 10 yrs)

KP – unclear to me too, unclear to "brass"

Rob – Decadal astro. ~~survey~~ plan? was invalid after a few years → operating on plan B.

Changki – These snomass meetings dont come around too often – must talk about further future

– must retain credibility → think hard before killing LBNE (e.g.)

– seems to suggest we focus on next 10 yrs not 10+

Mark Messier – we should focus on loger term (20yrs) and work backward.

– decide where we want to be in 20yrs

Vaya – avoid situation where we all attack each other's funding for next 5-7 yrs.

– focus on 2020+

B. ~~Wilson~~ Wilson (?) FSU – agrees w/ others about credibility.

– must make LBNE-1 better, focus on how to make this program better.

Mary Bishai – need for CDØ's for new ideas so we have options → ie, for μ-S.R.

Boris K. – important to discuss the next decade
– attract additional sources of funding from abroad
– short baseline program

K. Lang – balanced program (long term + short) important
– continue using existing facilities (needed for students)

M. Bishai – ν physics community should think of themselves as flavor physicists

MAK comment

Kevin Pitts – can we design an if/then flowchart?

I do not think of myself as a "ν-physicist"

Chung-Ki – no, because it takes so long to build expts.

C. Mauger – agrees w/ Chang-Ki
– could recite a plan for 2β decay

V. Lebedev – better to fight in group, not publicly
– cannot plan beyond 2020.
KP is this an argument against staging
VL – no, but prob of plan surviving 10 yrs is low
– unhappy about destroying Anti proton source for g-2e.
– LBNE looks premature, want to know what NOvA sees
– LBNE sets back all FNAL accelerator progress
→ it's like nova (beam perspective).

Ed: (Now people will attack VL)

Herdi S. – Mike Shaevitz + HS drew up a plan in 2002 (?)
– ends in ν-fact + μ collider
– advocates this long term path

Alberto Maccionni – disagrees w/ VL about need for accelerator physisicts (re VL – "we only need one")
↳ need to get to 2MW.
– have a plan – CP violation, but LBNE too small
– advocates effort to push this further
↳ go underground so as to do astro physics.

Marg B. – LBNE is not anti – project X
↳ need 35kt, underground
and [redacted] > 2MW source.
if we want LHC of ν-physics.

Ken Long – you can have a 20yr plan → LHC
[redacted] we have to plan over this length of time.

Brajesh Choudhury – do not send a fragmented message.
↳ articulate a big plan as the goal. +20 yrs plan.

Vaya – takes so long to build detectors these days.
hard to plan
– machines need customers.

MK! I didn't understand what she said.

KP – should we write up a document like we did ~~for~~ for [redacted] IF meeting?
"what is our charge?"

Milind Diwan – "LBNE started 10 yrs ago." (People in room saying "not true")
↳ does project X need LBNE?
↳ Milind heard project X doesn't need users (~~reacting~~ reacting to VL comments)
↳ focus on scientific program enabled by high intensity machine.

VL – I tried to set realistic expectations
↳ 35 kt LBNE postpones project X 5-7 years
↳ or just LBNE itself? (MK confused)
- no project X till 2025
super-c cavities cannot be developed fast – need expertise
- disagrees w/ A.M. on how hard LBNE beam really is
VL thinks it's not so hard.

AM – push for project X as much as we can
– but, we still want full detector too
– but, no $$$
– need international $$$
– need coherent plan – no internal fighting

MD – we are not being asked to fight for $$$

Steve Brice – like MD suggestion that project-X is the core of this process

John Rosner – we are thinking that each subgroup will produce a 30p document + 4-6p executive summary → those go into the intensity frontier document (30p) w/ executive summary
↳ then another higher level document.

Chang-Ki – we will need to see the big ~~process~~ picture @ snowmass including funding – P5 then prioritizes.

JR – one idea! appoint P5 before Snowmass
↳ CK: good idea.
↳ MD: does DOE have to approve ← KP = yes

CK – at last Snowmass we decided on linear collider!
no fiscal constraint.

MD – re: P5 → most people who would be on P5 will be aware
Don't pressure DOE

Heather Ray – focus on project-X, but have a shorter term plan

Lisa Kaufman – double β should be in the mix.

MK – PINGU – what if it can do M.H. for much less $$$?

VL – project-X enables a larger community not just ν-physics
– LHC wasn't 20 yrs → would not exist w/o SSC failure.

Rob Plunkett – doesn't think project-X progam is robust enough when compared to competition. (colliders, e.g.)
– I failed to get the sense of RP's comment (MK)

Karol Lang – last Snowmass many people were disappointed → LC, then killed; something is wrong w/ LBNE, people unhappy
Sense of
Doesn't want this to keep happening.

~~MD – we've~~

KP – we should have a plan w/ some fiscal constaints our document must be reasonable

MD – this group should not worry so much about funding and focus on physics

C. Mauger – HEP may not survive at current funding level! program must be compelling, careful not to dilute strong science program

M. Messier – if CP violation is important
it doesn't matter exactly when we do them
– even if funding changes CP will still be
important and we should stick with it
and advocate for it

Janet Conrad – APS ν Study was great – ν matrix

Suggests we look @ that process and
how it worked – Boris Kayser.

KP – do we need a spring meeting?

Carl Bromberg – cannot separate ~~collider~~ plan from funding
maybe we need to take $100M/yr to
do work in Europe/Japan?

maybe we follow collider folks.

Maury

What can we get out of Snowmass?

are things set for the next decade — Rob Plunkett

+ we are only discussing things after that? — Rob Plunkett

Next decade or 2020's + beyond?

Last planning exercise there was a need for Plan B's + Plan C's

Last snowmass - talked about next decade only.

* We're losing credibility in the International Community. Chay Kee

* We need to stick to things that have gotten investment of time and effort. ~~We're~~ follow through on

Mark Mesnie - We should be focused on the longer term.

Where do we want to be 20 years from now.

Then work backwards.

Vaia - avoid where we attack each other's funding in the last 5-10 years.

Bob Wilson - ~~[illegible]~~ international credibility is a big issue

LBNE wasn't what we originally wanted, so we need to bring in collaboration

Mary Bishai – Need CDG's for this later

Boris – Need to attract foreign funding. Other things besides what's on the table can be done in the next decade.

also we'll talk to each other at Snowmass

Kevin – inreach

~~Karol~~

Kevin – is a ~~[illegible]~~ roadmap possible

Chey Kee – No. Can't do one at a time

Chris Mayer – could for OrBB

Valeri Zebedev – you can't plan anything beyond 10 years.

not an argument against stage

LBNE sets back accelerator program

duplication of NOvA

Heidi don't need a roadmap, need a London tube map

Alberto 200 kW is not enough

goal is for Project X + a detector underground with more than 10 kT

Mary LBNE is anti-project X

Kenlong – challenge that you can't have a 20 year plan – CHL example

Bragesh – no fragmented message

Kevin P: Do we want to make a document

Milind: LBNE needs Project X
~~[illegible]~~ didn't hear if Project X needs LBNE,

Alberto: We need international participation

Steve B: Project X should be the organizing principle of the document

Roman 30 pages overall few page ex sum
each group – 30 pages with an ex sum
each subgroup 30 pages with a few page ex sum

3 ~~[illegible]~~ tiers of 30 page document (?)

Chy Kee: need to smoothly link summer study & P5

Roman: have P5 appointed by Snowmass?
DOE does it

Heather Ray: focus on Project X but don't limit it
also sterile ν's & cross sections

Lisa — also double beta decay

Mike K. — need to consider Ice-cube

Karol L — don't want like Snowmass
which was a letdown
everyone on CBNE is unhappy

Chris — Need a coherent vision in intensity frontier
for the future, not just within the fixed
There is no guaranteed level of funding.

Mark — It doesn't matter if we do
CP violation in the 2020's or the 2030's.
We need to make progress under any
funding profile.

Conrad — review the neutrino matrix
document as a guide what to look for

Carl Bromberg — can't separate what we do from
funding realities.
maybe take $100M/yr to Europe or Taos
input to Kate, Andre, Kevin,

Some Notes – maybe to submit

1st Q

What is it that we hope to get out of this Snowmass Process

Rob – confused by IF presentation yesterday (lab)
→ everything for next decade was "set"
→ all we are discussing is the *following* decade
Is that right ??

Which was the next Q –
We know Projects have timelines & a CD process, but does that lock in the near term?

R – Astronomy → they made a 10-yr plan, and then the whole thing shifted and they had no Plan B

Upshot – confusion among the audience – are we discussing what to do next 10 yrs "until" LBNE ?? or IS the next 10 yrs LBNE ?

Have put investment into LBNE & all the processes leading up to it – think really hard if that plan changes J Kee

MMes. we should focus on the longer term – where do we want to be in 20 10 yrs and then work backwards – but while working backwards keep focused on that agreed goal

ViaPap killing anything that was started will have negative effect

B Wilson – credibility of US program comes into question exactly because the plans seems to shift – can't commit. LBNE as currently being reviewed is not the experiment collaborators want.
To some – LBNE is the culmination of a process started at WAIN – 1999

Mary B – what DOE seems to want – we need CD0's for MORE projects, of a variety of time-scales – but always ones which can contribute to the 20yr-out goal which Mark mentions

Boris K – while good to have a long view, need also to look at the coming 10 yrs and how to strengthen it –
trying to get a sense from those in the DPF line (Rosner) & one item is just that – what's going to happen within 10 yrs –

Cont —

what physics is within reach? Nu people need to see what motivates Collider and visa-versa — where do those motivations connect?

Karol - balanced program — long term vision yes, but also examine just how much can be squeezed from existing facilities +

~~Mary~~

Mary - some inputs to physics parameters in one ~~triad~~ part of the triad may come from other parts of the triad, or from nuclear phys

K Pitts - Q is there an IF-THEN chart that could be made?
IF Nova does this, then do this next thing, otherwise a different next thing

J Kee - No. That implies waiting for one answer that took 15yrs to get to before starting the next thing that takes 15 yrs
for CP from neutrinos - were told you have to wait to see if θ_{13} is large - so now it's large... do we get our exp LBNE in 15yr

Chris LANL - missed - echoed above

No name - but you just can't plan more than 10 yrs Look at reality.
Russian accent
What was in the 10 yrs plan, 10yrs ago?
→ my comment, see Stan's summary slides from NNN goes on into an example involving anti-p source.....
then ... what will Nova find? When we know that, there's a good chance that you will want a "different" LBNE, and not the one that just passed it's CD2 review....

Heidi - Not a roadmap - a schematic like the Tube Map
Made (past) a sketchy Nu program - doing something w/ high intensity beams, to larger detectors, to Nu-factories included, back then, going underground
So we HAVE had this roadmap - already for more than a decade
we may disagree on the details but we all need to keep pushing that there IS and HAS BEEN a plan ((one of the better comment thus far - editor))

Alberto - struggling to get higher intensity beams — all over, not just in US
And 700 kw not enough
Need 2 MW or more — takes real planning + effort
LBNE as it is now which won't be able to do the desired CP violation detection
Mass hierarchy may well be determined via other combinations of data, but that's not the end
Need Project X

Mary - seems @ FNAL to be stress within AD that there is an LBNE versus Prj X tension. But the real tension is the low funding level and how to move BOTH

Ken Long – comment - "can't have a plan for 20 yrs"
Not true – look at the LHC
Problem in Nu area is that the plans are growing to huge size
even larger $$ than it took to build LHC

India – I should remember his name — ultimate goal is CP violation
But right now there appears to be a fragmented message

Vaia – we all want to see Prj X .... but given limited funding will take longer to get Both Prj X + LBNE

editor's comment - yes, it will
and while unfortunate, many of the "tensions" exist because people have a hard time adjusting to the current, apparent, ZERO SUM game in funding

Milind D – it took many years "to get people's attention"
hear "LBNE needs Prj X"
but don't hear "Prj X needs LBNE"
Why do we not get that boost from Accelerator Scientists?

Russian guy – prior comment - was trying to state realistic expectations
5-7 yrs to get Prj X started .... maybe by 2020
but you [the nu community] won't see beam from it before 2025...
Reality – we can't do all these things at once, given the funding
and that's why that "tension"

K Pitts – Back to
What are the goals for this group?

Alberto – yes – can't build a big detector w/o halting everything else
But you NEED the big detector
And we NEED the higher intensity beams
MUST be working harder to ~~be~~ go beyond the US

Milind – but in this process, we are not being asked to lobby for more dollars
we are being asked to form a Plan

S Brice – go back to initial Q – and to earlier comment
set the GOAL, then how to get there .... which is $ unds
comes in

J Rosner – each subgroup will produce ~30 pages technical doc
w/ 4-6 page exec summary

Combine all, with a header exec summary (IF)

Combine the 3 Tiers, w/ a header exec summary

Jkee – & in Astro – they produce a prioritized list
P5 did that for us ....
But hard for us, with limited info, to make the prioritized list
Maybe more of a survey, ... gather the & scientific goals
Leave priority to P5

J Rosner – one suggestion, to have P5 appointed & present @ Snowmass
he was at first opposed to this — but now in favor of it

Miland – is this a proposal still, to DOE? [who appoints P5]

Ans – YES

Jker – Last Snowmass – said "we" waited ILC — but that "decision" was made in an absence of BUDGET realities

K-Long – states what European process is

MiLND – need the budget reality / prioritization PRESENT @ this Snowmass

Heather – agrees w/ Steve to focus the doc on Prj X & how it feeds to goals
But don't leave out the "smaller" stuff that can be done "in the meantime"

Lisa – second that – reactor exp, non-accel based stuff

Mike K – last wk NNN saw mass hierarchy limits which can be set by PINGU — so have to include these – what they can contribute

Russian – back to LHC & 20yr planning....

Rob P — two threads — to emphasize
- Cannot disrupt one item for another — we are not LBNE vs Prj X
- there will be new stuff from colliders too — how does nu-physics stack up against it
- what fall back positions are possible if LBNE + Prj X takes 20-yrs or more?? But if you say too much about this

Karol — don't want to see the Snowmass turn out like the other
Last one was a letdown
People felt

Talk to people on LBNE — and the collab is not happy
They went through the required process and ended up someplace they don't want t
→ Russian — ~~this~~ are they all unhappy in the same way??
~~this is the problem~~

Milind — concensus will depend in part on the boundary conditions set by the process we are in now? J Seiprist @ HEPAP,... he still wants to see the "ideas" even if they bust the budget

K Pitts — if we write down that we want FULL LBNE with FULL Prj X by 2025 and it's going to cost $8B, then we won't get it — and may not get EITHER of the above

Chris L — thinks Milind + others are really saying the same thing
Have to make arguments for survival — HEP won't survive this Fund
a compelling program that holds up against — say — collider or Prof
even outside HEP

Mark Mes — have to articulate that the physics is so important that we need to get there no matter how long it gets stretched out
And we have to ask OURSELVES as to our level of commitment

Janet — earlier matrix of stuff to do, results from Bonsk work —
still useful after all these years — Need to repeat that

Carl B — really can't separate what we plan from the budget. Take our $180M per year & go to Japan ...