

# Status and Plan for September

- ICFA's LC technology recommendation – Cold:
  - Immediate ripple effects in all large HEP labs
  - A big plus for the sc linac option of the proton driver
  - Final decision of the proton driver option will also depend on the technical feasibility and cost
- Accelerator Division will form a small core group of proton driver.
- In the lab's 2005 budget guidance to AD there will be a line item for proton driver R&D.
- Various proton driver activities:
  - RF group Tuesday meeting
  - Parameter group Tuesday meeting
  - Civil group Wednesday meeting
  - AD group Wednesday meeting (This meeting)
  - Cryo group Thursday meeting
  - Holmes' office Thursday meeting
  - Proton driver physics workshop October 6-9 at Fermilab
  - Proton driver session in the HB2004 workshop in October in Germany
  - Director's review probably in November
- Plan for September – to finish the 8 GeV  $H^-$  transport and injection study:
  - Sept 8: 8 GeV beamline collimation (A.D.), energy jitter correction (J.M.)
  - Sept 15:  $H(0)$  excited state lifetime (A.D.)
  - Sept 20-24: Two visitors – H. Bryant (blackbody radiation) and R. Macek (large angle Coulomb scattering). To draft a summary of the 8 GeV  $H^-$  injection study, which will become a chapter of the upcoming report.

# Small Core Group of Proton Driver in the AD

To: R. Dixon

From: W. Chou

Date: July 30, 2004

Subject: Proposal for Forming a Small Core Group of Proton Driver in the AD

The present Proton Driver study group in the AD consists of about 33 people with each spending a minor portion of time on this project (mostly 10-20%, a few 20-30%). In the past several months, it has become evident that this is not the best way to organize the effort and cannot meet the growing demands of the workload as the project progresses. I propose to form a small core group, in which each person will commit a majority of time (51% or more) to the proton driver. This will be a more effective way to get the work done. In the meantime, those people who are involved in the project but not in this group will continue to contribute in the way it is now, because this small group by no means could cover all the expertise required by this project.

An important consideration in establishing such a group is that it should not interfere with Run2. The following people are chosen with this constraint in mind:

# 8 GeV H<sup>-</sup> and Carbon Foil Calculations

What we have done:

- (1) H<sup>-</sup> field stripping (Bryant, Chou)
- (2) H<sup>-</sup> gas stripping (Chou)
- (3) H<sup>-</sup> foil stripping efficiency (Chou, Burgdoerfer)
- (4) Energy deposition (Chou, Drozhdin, Kostin)
- (5) Temperature rise and stress analysis (Tang)
- (6) Multiple Coulomb scattering and emittance dilution (Chou)
- (7) Radiation dose (Kostin)
- (8) Lifetime of H<sup>0</sup> excited states in a field (Drozhdin)

What remains to be done:

- (9) H<sup>0</sup> excited states population (? difficult)
- (10) Blackbody radiation (Bryant)
- (11) Large angle Coulomb scattering (Macek)

# Proton Driver R&D Projects

- Proton Driver specific:

- Fast RF tuner and other sc RF R&D
- Beam pipe prototyping
- H- source
- Stripping foil

B. Foster  
A. Chen  
D. Moehs  
J. Lackey

red: funded  
green: partially funded  
dark blue: waiting

- Related Proton Plan projects in the Booster:

- Large aperture Booster RF
- Dual harmonic power supply test at E4R
- Laser chopping

J. Reid  
D. Wolff, C. Jach  
R. Tomlin

- Related Run2/NuMI projects in the MI:

- WQB (large aperture quads)
- Fast ramp (1.5 s NuMI cycle)
- RF
  - Two PAs per cavity
  - New cavity design
- Collimation
- Gamma-t jump
- Kicker upgrade
- Replacement of old MR quads

D. Harding  
D. Wolff  
  
R. Pasquinelli  
D. Wildman  
A. Drozhdin, N. Mokhov  
W. Chou  
C. Jensen  
I. Kourbanis



# Fermilab-IHEP Collaboration

- ◆ **Neutrino physics**
  - **Long baseline neutrino oscillation experiment:**
    - A Proton Driver and a deep beam line in Fermilab
    - A large detector in Beijing
    - Fermilab-Beijing baseline: 9,400 km
  - **NOvA:** (NuMI Off-axis  $\nu_e$  Appearance Experiment)
    - Co-spokespersons J. Cooper and G. Feldman welcome the IHEP to join.
    - Invitation to the October 2-3 collaboration meeting at Fermilab.
  - **FLARE:** (Fermilab Liquid ARgon Experiment)
    - Contact person A. Para is enthusiastic to have Chinese colleagues on board.
    - A collaboration meeting is being planned.
  - **MINOS:**
    - Co-spokespersons S. Wojcicki and D. Michael will be happy if the collaboration with the IHEP can be resumed.
    - Preferred contribution area: increase of protons on target.
- ◆ **Accelerator**
  - Accelerator Division head R. Dixon is willing to collaborate.
  - Possible areas: beam-beam, RF, RFQ.
- ◆ **How to collaborate**
  - Participation in collaboration meetings
  - Videoconferencing
  - Joint workshops
  - Visitor exchange (e.g., two IHEP people stationed at Fermilab for 3-6 months)