ICAR Workshop Summary

Daniel M. Kaplan
Principal Investigator, ICAR

ICAR Workshop
ANL
19–20 May 2004

I’ve been asked to summarize this 1-1/2-day meeting:

In this day and a half we have heard and seen a great variety of interesting, important work...

...way too much to summarize in half an hour (even had I time to digest it all)!

So, here are some (subjective!) remarks based on what I've seen, heard, and thought:

Partial list of topics discussed:

- Ground-motion studies
- Digital calorimetry
- Drive-beam optics
- Polarized and high-brightness positron & photon sources
- Plasma acceleration
- Neutrino Factory design optimization
- Alternative muon-cooling channels
- Liquid-hydrogen absorbers
- High-gradient warm RF cavities
- Tuners for cold RF cavities for RIA
- Development & applications of Geant, MARS, and other simulation codes
- Beam-loss & beam-profile monitoring

. . .

. . .

. . .

ICAR Prospects

- ICAR aims to engage in valuable accelerator R&D activities worthy of long-term pursuit
- It was always clear that long-term stability would require additional funding sources

  ⇒ Need to attract federal funds – but how?

- Examples:
  - $24M NSF proposal for US MICE Consortium (IIT/NIU/UIUC)
  - proposal (now funded) for LC detector development (UC)
  - proposal for Digital Hadron Calorimetry (NIU)
  - proposal for ground-motion studies (NWU)
- These are "case-by-case" proposals, each from a subset of ICAR, for specific projects
- Is there also opportunity for broad proposals for ICAR as a whole?
- Is there opportunity for industrial/philanthropic support?

New support ideas:

- Propose DOE/NSF support for ICAR cross-cutting accelerator-R&D activities (i.e. neither muon nor LC):
  - development of high-gradient warm & cold RF
  - surface & material studies relating to breakdown in RF cavities
  - development of beam-monitoring detectors
  - development of beam-related simulation codes
  - ...?
- Training?
  - HEP graduates & postdocs do well in high-tech industry (e.g. Lucent)

  → might a Board of Industrial Affiliates be willing to endow ICAR fellowships?
    - say UG/summer, graduate, postdoctoral

    (how many students & postdocs do we support?
    have any yet gone to industry or is ICAR still too young?)
- What else...?

Fostering closer inter-ICAR cooperation?

- This is the first ICAR Workshop
- Has it been a success?
  - I think so!
    - interesting work going on at all ICAR member institutes
    - fun and educational to hear everyone talk about what they're doing
- Would it be useful to have periodic or occasional "topical" ICAR meetings?
  - e.g. (say) ~monthly beam-simulation meetings?

How should ICAR's emphases develop?

- Now pursuing a cluster of muon-cooling-related topics plus a broad array of LC-related topics (both machine and detector) plus physics of high-intensity beams plus new acceleration approaches
- Problems with this:
  - DOE & FNAL support for muon cooling has become lukewarm
  - LC machine work clouded by too many choices, not all of which may be likely in IL
  - current list mostly omits RIA and Proton Driver
- To what extent should we be willing to compromise academic freedom to work on the "problem of the month"? (or year or decade...?)
  - one of ICAR's strengths in principle is ability to pursue an interesting problem over time, unperturbed by fashions of the moment
  - of course, requires funding agency willing to take the long view

Should ICAR grow?

- E.g.,when ICAR was being formed, we contacted UIC
- They were interested but unable to commit at that time
- Should we go back to them now?

Conclusions

- In these first few years of its existence, ICAR has made a good start on a number of important problems
- Loss of State funding for next year is a blow, but we hope it is temporary
- It provides impetus to go after additional grants
- Several grants already proposed
  - approval of any could cushion the blow
  - we expect funding decisions over coming months
- Expect ICAR to continue a vigorous program of accelerator R&D