

DNP LRP Meeting on Education and Innovation

Wednesday, 6 August 2014

7:00 PM Welcome Reception - NSCL Atrium

Thursday, 7 August 2014

8:30 AM *Breakfast*

9:00 AM **Plenary Session** - NSCL Lecture Hall

Introduction and Overview

Remarks by DOE

Remarks by NSF

NSAC report on workforce development

Michael Thoennesen (MSU)

Jehanne Gillo (DOE)

Brad Keister (NSF)

Jolie Cizewski (Rutgers)

10:30 AM *Break*

10:45 AM **Plenary Session** - NSCL Lecture Hall

• *Workforce Development*

Analysis of workforce demographics

NNSA Workforce Development

The future MARS program at FIU

Educational aspects of the FRIB theory center

Workforce development in computational nuclear physics

Michael Thoennesen (MSU)

Sean Liddick (MSU)

Joerg Reinhold (FIU)

Filomena Nunes (MSU)

Richard Furnstahl (OSU)

12:00 PM *Lunch*

1:15 PM **Education** - NSCL Lecture Hall

• *Graduate Education*

2:30 PM *Break*

2:45 PM **Education** - NSCL Lecture Hall

• *Undergraduate Education*

4:00 PM *Break*

4:15 PM **Education** - NSCL Lecture Hall

• *K12*

5:30 PM *Break*

6:00 PM *Dinner* - NSCL Atrium

7:30 PM **Parallel discussions on draft recommendations**

Parallel Sessions

Innovation - 1221A/B

• *Defense and Security*

Innovation - 1221A/B

• *Energy and Climate*

Innovation - 1221A/B

• *Health and Medicine*

Friday, 8 August 2014

8:30 AM *Breakfast*

9:00 AM **Education** - NSCL Lecture Hall

• *Public Outreach*

10:15 AM *Break*

10:30 AM **Plenary Session** - NSCL Lecture Hall

Summary discussions of recommendations

12:00 PM *Adjourn*

Innovation - 1221A/B

• *Innovation, Art and Forensic*

August 6-8, 2014

NSCL, Michigan State University

First official Town Meeting on Education and Application for a LRP

74 total participants

Organizing committee:

Ed Hartouni (LLNL)

Anna Hayes (LANL)

Calvin Howell (Duke)

Cynthia Keppel (JLab)

Micha Kilburn (Notre Dame)

Amy McCausey (Michigan State, conf. coordinator)

Graham Peaslee (Hope College, co-convener)

David Robertson (Missouri)

Gunther Roland (MIT)

Mike Snow (Indiana)

Michael Thoennesen (Michigan State, co-convener)



Task and timeline

Draft recommendations and write a white paper for the 2015 long range plan

SCHEDULE:

August/September:	3 town meetings focused on nuclear science
October 8 th :	Open discussion session at the DNP fall meeting in Hawaii
December:	White papers from town meetings are due
Jan-Mar 2015:	Resolution meeting
October 2015:	Report due at DOE/NSF



Overall Goals

- Ensure the future of Nuclear Physics as an exciting field of research
- Attract the brightest students to the field
- Pay attention to career development, mentoring, etc...
- Education and dissemination has to be an integral part of research
- Nuclear science has to be promoted by the whole community
- Innovative approaches to address some of the challenges should be fostered and appreciated
- Development of future applications is critical

Overall recommendation 1

Education and mentoring of the next generation nuclear scientists as well as dissemination of research results to a broad audience is an integral part of research. The funding agencies must ensure that these essential aspects become the responsibility of all researchers.

- These activities cannot be done by only a few on a voluntary basis
- Ensure the long term future of the CEU program
- There is general concern about separation of research and education (Nuclear Chemistry Summer School)

Overall recommendation 2

Nuclear science is an active and vibrant field with wide applicability to many societal issues. It is critical for the future of the field that the whole community embrace and increase its promotion of nuclear science to students at all stages in their career as well as to the general public.

- Some departments do not list their nuclear physics research as Nuclear Physics (not listed on their websites and/or gradschoolshopper.com)
- This has a negative impact on impact of the field (counting of Ph.D. theses) and on graduate recruiting (potential students do not find all available research opportunities)



Overall recommendation 3

Nuclear Physics researchers have been innovative leaders in the full spectrum of activities that serve to educate nuclear scientists as well as other scientists and the general public in becoming informed of the importance of nuclear science. The researchers are encouraged to build on these strengths to address some of the challenges in educating an inclusive community of scientists as well as those on the path to future leadership in nuclear science.

- Examples include CEU, online education, DNP mentoring award
- Challenge the field to address broad issues like diversity and outreach



Next steps

- Refine draft recommendations
- Solicit “one pager” on outreach activities
- Update workforce statistics and demographics
- Write white paper

Presentations are available at the town meeting website:

<http://meetings.nsl.msu.edu/Education-Innovation-2014/program.htm>



“One-pagers” on outreach activities

Physics of Atomic Nuclei @ Notre Dame

Organization: University of Notre Dame
Contact: JINA Outreach
(574) 631-5326
jjnaout@nd.edu

Grade Level: High school
Funding: NSF

Physics of Atomic Nuclei @ Notre Dame (formerly PIXE-PAN) hosted 15 high school students from 9 different states in its 6th year. Over the course of the week, students were presented with lectures by faculty in nuclear physics and astrophysics, performed modern lab experiments in the state of the art Jordan Hall of Science, and presented their findings in a poster presentation to parents and members of the physics department. The students entered the program with a high interest in science, and nuclear astrophysics in particular, and their interest remained high after. However, gains were seen in their attitudes towards basic nuclear research, and an understanding of what a career in research entails.

“I am really much more interested in nuclear science in general now”
The average score on the knowledge test, which covered lecture material as well as experimental concepts, rose from 47% to 73% after the week-long program. The students also found the program immensely enjoyable.

“Learning with a group of peers interested in science the way I am was one of the best educational experiences I’ve had so far”



website: www.jinaweb.org/outreach/PAN_ND/

As a result from the 2006 workshop on “Vision for Education and Outreach in Nuclear Science” in preparation for the 2007 LRP, a collection of “one-pager” of outreach activities was assembled.

Many nuclear scientists are very active in a variety of outreach activities and we would like to highlight them again in a similar collection.

Template is available at:

<http://meetings.nscl.msu.edu/Education-Innovation-2014>

Please send your contributions to Peggy Norris:

PNorris@sanfordlab.org



National Science Foundation
Michigan State University

Summary

- Education and dissemination has to be an integral part of research
 - Nuclear science has to be promoted by the whole community
 - Innovative approaches to address some of the challenges should be fostered and appreciated
 - Development of future applications is critical
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- Recommendations and white paper are work in progress
 - Continued input and feedback is highly encouraged