

# JINA Outreach at NSCL





# The Goals for Outreach

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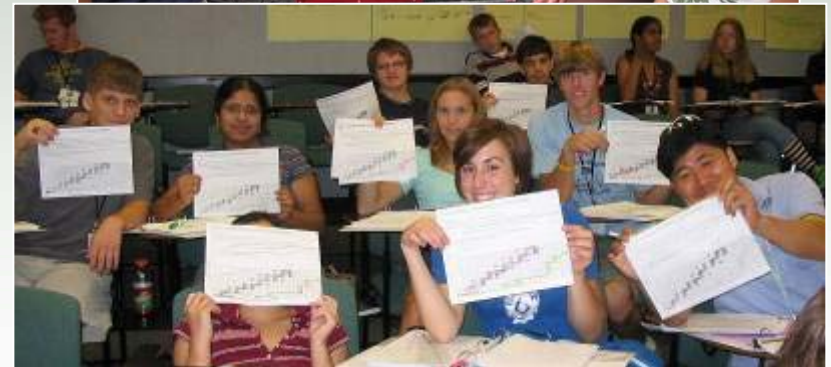
- *Rising Above the Gathering Storm:*  
A Report by the National Academies of Science
  - "Summer research programs **stimulate student interest** and achievement in science..."
  - "...the committee recommends a **summer education program** for 50,000 classroom teachers each year."
  - "**Professional development for teachers** increases student achievement in science."
  - "The system of **national laboratories** ... can be tapped for continuing education of K-12 teachers."

# Physics of Atomic Nuclei (PAN)

Organization: JINA/NSCL

Grade Level: HS Teachers and Students

- The 2-week PAN program, now in its 14<sup>th</sup> year, features:
  - Faculty lectures on nuclear science and cutting-edge research
  - Radiation laboratory experience
  - Building a cosmic ray detector and conducting self-designed experiments
  - Experience and tools for teachers to use in the classroom
  - A taste of research at a large institution for students



JINA Advisory Committee Meeting  
Outreach Report

# JINA Art-to-Science

Organization: JINA Grade Level: K-6<sup>th</sup> grades

- Young students learn about astronomy through creativity
  - Grants to classrooms provide:
    - Elementary-level books on stars, planets, observing, etc.
    - Art supplies
  - After reading the books, the students paint astronomical phenomena that inspire them
  - Their artwork is displayed at JINA frontier centers and on the JINA website



JINA Advisory Committee Meeting  
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# JINA Classroom Mini-Grants

Organization: JINA Grade Level: Any

- Putting technology in the classroom
  - Teachers may apply for any equipment/materials they could use to teach subjects related to Nuclear Astrophysics
  - JINA has provided:
    - Cameras for spectrosopes
    - Telescope eyepieces
    - Geiger counters
    - Mini planetaria
    - Cloud chambers
    - CPEP Nuclear Science Charts
    - And much more...



# Mini-PAN

Organization: JINA/NSCL Grade Level: High School

- A day at a world-class nuclear research laboratory
  - Tour NSCL
  - Hear faculty lecture on the nature of cosmic rays and cutting edge research
  - Learn to operate a cosmic ray detector
  - Conduct small-group experiments on cosmic rays
  - Return to school with data for further analysis and discussion



# Magnetic Marble Nuclei

Organization: JINA/NSCL Grade Level: 6<sup>th</sup>-8<sup>th</sup> grades

- This introduction to isotopes lets groups:
  - Explore nuclear properties by building a model nucleus with magnetic marbles and then smash it
  - Touch on subjects such as unstable isotopes, decay modes, nuclear reactions...
  - Learn how NSCL creates and studies rare isotopes



# Looking ahead for outreach

- Through current programs and more to come, we will continue to provide what the teachers and students need most
  - For teachers: access to new equipment and continuing education to help them bring nuclear science to the classroom
  - For students: a chance to experience science in action, find inspiration, and discover new careers

