Deliverables for BNL Internships (1):

General Audience Abstract & Virtual Project Oral Presentation

The Office of Educational Programs

Summer 2022, Week 2

Brookhaven National Laboratory
U.S. DEPARTMENT OF ENERGY

Required program deliverables

1. Weekly Report, due on Thursdays by 3pm (not required for first and final weeks)
2. DOE-WDTS Pre-Survey for SULI and CCI interns – due week 1
3. Onboarding Survey (VPN required) – due week 1
4. Virtual Appointment Checklist, due week 1
5. General Audience Abstract – 300-word limit
6. Research Project Paper – Length between 1500 and 3000 words, excluding this report's abstract (approx. 5% of total), footnotes, appendices (< 3 pages), the bibliography, and similar items.
7. Poster, including an abstract – 150-word limit for abstract
8. Virtual Project Oral Presentation (A PowerPoint of your project)
9. Peer Review of Posters
10. All College Participants Exit Survey (VPN required)
11. DOE Post-Survey for SULI and CCI interns – due prior to departure

OEP Resource page at bnl.gov

https://www.bnl.gov/education/resources.php

Faculty Program

- Acknowledgement Reference
- Visiting Faculty Deliverables Requirements and Guidelines
- VFP Research Proposal Guidance

College Program

- Master Schedule
- Participant Weekly Report Template
- Peer Review Template
- Acknowledgement Reference
- Exit Survey

Submit Weekly Reports and Deliverables

Safety at Home

Poor office ergonomics, such as using an uncomfortable chair, prolonged sitting or lifting something too heavy can easily result in injury.

Make sure to take stretch breaks and develop an ergonomically friendly environment.

Poster References

- Creating a Poster
- Sample Poster 1
- Sample Poster 2
- DOE Poster Logos
- BNL Poster Logos
- Acknowledgement Reference

Writing Guidelines

- Intro to Deliverables
- Project Abstracts
- Project Reports
- Virtual Internship Presentation Template
- Virtual Internship Presentation Template (Blank)
- Peer Review Guidelines

Internship Reports

- 2020 Compilation
- 2018 Compilation
- 2017 Compilation
- 2016 Compilation
- 2015 Compilation
- 2014 Compilation
- 2013 Compilation
- 2012 Compilation

DOE Exit Surveys

- CCI Students
- SULI Students
- VFP Students
- VFP Faculty

All College Participants:

- Complete this Exit Survey

Brookhaven National Laboratory

Document Naming Convention

All document names must begin using the following template:

Lastname_FirstInitial_Deliverable_week# (02 through 10) or final

Examples:

- stegman_m_weekly_02
- stegman_m_resume
- stegman_m_abstract_final
- stegman_m_paper_final
- stegman_m_poster_final
- stegman_m_review_final

Use_underscores_not_spaces

Brookhaven National Laboratory

Collaborating & Submitting

- If you are part of a collaborative team, you only need to complete ONE abstract for a general audience, ONE report, and ONE poster.
- List all collaborative authors and simply swap the order for each deliverable when you submit your individual copy of a deliverable.
- Create a subfolder named **WEEKLY REPORTS** in your SharePoint folder.
- Create a subfolder named **FINAL DELIVERABLES** in your SharePoint folder.
- Drop all final internship deliverables in the FINAL DELIVERABLES SharePoint folder.

Brookhaven National Laboratory

An Abstract in only 4 Weeks? Really?!

- How can I write a complete abstract after only 4 weeks?
- One idea: wireframe (an outline)
- Another: Sketch in all of the components
- Indicate missing info using placeholders
- Be speculative if necessary
- Get real by the end of the summer

General Audience Abstract

Length: <300 words

This summary should:

1. Highlight YOUR research/project accomplishment(s)
2. Written at a level approachable by a broad and largely non-subject matter expert audience (*Scientific American* level of sophistication)
3. Describe Department of Energy programmatic or mission relevance of your activities
4. Define the institutional setting, and
5. Generally, discuss activities, outcomes, impacts, lessons learned, and professional growth and development resulting from your appointment.

Submitting abstracts and scheduling a conference

- Collaborative Projects: Submit ONLY ONE copy of each draft
- Save drafts as Word docs; save FINAL as PDF.
- Upload it to your SharePoint folder
- **Drop-dead Deadlines**: 3pm on **6/30, 7/21, 8/4, 8/11**
- **Writing Teleconference sign-up**: WAIT, we will contact you.
- I'll indicate if I wish you to schedule a conference.

General types: General Audience Abstract, Research Project Paper, Poster

Standard outlines:

- I – M – R – A – D – C
  Introduction, Methods, Results, Discussion, and Conclusion

- Narrative, Process, et al.

General Audience Abstract

Length: <300 words

This summary should highlight research accomplishment(s), be written at a level approachable by a broad and largely non-subject matter expert audience (*Scientific American* level of sophistication), describe Department of Energy programmatic or mission relevance of your activities, define the institutional setting, and generally discuss activities, outcomes, impacts, lessons learned, and professional growth and development resulting from your appointment.

General Audience Abstract

Length: <300 words

This summary should highlight research accomplishment(s), be written at a level approachable by a broad and largely non-subject matter expert audience (*Scientific American* level of sophistication), describe Department of Energy programmatic or mission relevance of your activities, define the institutional setting, and generally discuss activities, outcomes, impacts, lessons learned, and professional growth and development resulting from your appointment.

General Audience Abstract

Length: <300 words

This summary should highlight research accomplishment(s), be written at a level approachable by a broad and largely non-subject matter expert audience (*Scientific American* level of sophistication), describe Department of Energy programmatic or mission relevance of your activities, define the institutional setting, and generally discuss activities, outcomes, impacts, lessons learned, and professional growth and development resulting from your appointment.

General Audience Abstract

Length: <300 words

This summary should highlight research accomplishment(s), be written at a level approachable by a broad and largely non-subject matter expert audience (*Scientific American* level of sophistication), describe Department of Energy programmatic or mission relevance of your activities, define the institutional setting, and generally discuss activities, outcomes, impacts, lessons learned, and professional growth and development resulting from your appointment.

General Audience Abstract

A summary of your BNL experience OR a research paper abstract

DOE format for General Audience Abstract

While you should touch on each of the following topics in this checklist, you need not organize them in this sequence.

- Discuss your **activities** including a definition of the institutional setting (BNL, NSLS II, RHIC, etc.);
- Highlight **accomplishments;**
- Discuss **impact**(s) on BNL research of your research ;
- Describe **relevance** of your research activities to DOE program(s) or mission;
- Highlight **lessons learned;**
- Discuss the **professional growth and development** resulting from your appointment.

General Audience Abstract, Sample

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 μm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

Activities (inc. institutional setting)

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 μm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

Accomplishments

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 μm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

Impact on BNL research

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 μm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

Relevance (e. g., emerging technologies)

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 µm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

Lessons learned

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 μm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

Professional development

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 μm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized the amorphous carbon into graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department staff, we are exploring new methods of micro-ribbon fabrication that will have superior material properties. One possible approach consists of depositing thin films of nickel and carbon on a silicon wafer through an anisotropically-etched silicon wafer mask. By annealing amorphous carbon micro-ribbons, we consistently achieve conductivity and crystallinity results similar to those found in the surviving RHIC micro-ribbons. When annealed at 700 °C, a 10 nm thick amorphous carbon layer forms a solid solution within the 50 nm thick nickel layer before recrystallizing as graphene on the surface of the nickel. Graphene is well known to have superior electrical conductivity and tensile strength, and may well prove to be an ideal material for the next generation of micro-ribbon targets for RHIC during its next proton polarimetry experiments in 2015. As a result of this summer, I have added electron microscopy to my repertoire of materials characterization techniques. Additionally, I am now familiar with microfabrication processes and several software programs including DesignCAD, NPGS, MathCAD, and Scandium.

General Audience Abstract

A summary of your BNL experience OR a research paper abstract

Alternate format for Abstract for a General Audience using a scientific research paper outline

- An **introduction** that succinctly describes and appropriately connects the subject and context/ background to the purpose of the investigation;
- A **methods** section that succinctly identifies the methods used to study the subject of the investigation;
- A **results** section that provides a succinct and specific explanation of what was discovered, accomplished, collected or produced;
- A **discussion** that provides a succinct interpretation of the results and evaluates what the results mean to the investigation, or when results were not obtained evaluates what the completion of the investigation could mean within a larger field.

General Audience Abstract, Sample

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory requires a highly polarized proton beam for spin-polarization studies. During each experimental run, 250 GeV protons are elastically scattered from a carbon micro-ribbon target 10 µm wide and 50 nm thick to monitor the degree of proton beam polarization. Experiments have shown that the amorphous carbon targets have poor electrical conductivity, limiting their lifetime. Since RHIC operates continuously for several months at a time under ultra-high vacuum, it is costly and inefficient to use carbon targets with short lifetimes. Our study has examined the few micro-ribbons that serendipitously survived a recent RHIC experimental run. Transmission electron microscopy diffraction pattern analysis of the micro-ribbons shows that heating from the RHIC beam has crystallized

Introduction graphite. In addition to examining micro-ribbons fabricated by Collider-Accelerator Department

methods of micro-ribbon fabrication that will have superior material properties. One possible

approach co **Methods** s of nickel and carbon on a silicon wafer through an anisotropically-etched silicon

wafer mask. arbon micro-ribbons, we consistently achieve conductivity and crystallinity results

similar to those found in the surv **Results** hen annealed at 700 °C, a 10 nm thick amorphous carbon layer

forms a solid solution within the 5 re recrystallizing as graphene on the surface of the nickel.

Graphene is well known to have superior electrical **Discussion** ength, and may well prove to be an ideal

material for the next generation of micro-ribbon tar t proton polarimetry experiments in 2015. **As a**

result of this summer, I have added electron microscopy to m **Professional development** **niques.**

Additionally, I am now familiar with microfabrication processe esignCAD,

NPGS, MathCAD, and Scandium.

Brookhaven National Laboratory

Format for the General Audience Abstract

TITLE

- Include your title, even if it is not the final version. Be sure to capitalize **ONLY** the first word; no acronyms.

AUTHORS

- On a new line begin with yourself as the first author; include your school information. You mentor is the last author; include his/her BNL information.

TEXT

- Skip a line. Indent paragraph, double-space, 12 point Times Roman, flush left. Define all acronyms used more than once in this abstract. ONE paragraph only. 300 word limit, excluding title and authors.

Title/Author format example

Drag on an axially symmetric body in the Stokes flow of micropolar fluids
John J. Doe and Jane G. Smith, Department of Physics, Massachusetts Institute of Technology, Cambridge, MA 02193

Author information template:

You, **Your School's** Department, Your College, City, State ZIP
Your mentor, BNL Department, Brookhaven National Laboratory, Upton, NY 11973

Format for the General Audience Abstract

One, double-spaced paragraph (< 300 words), indent first line, no justification.

The title of your report; not a label

Your author information

Your mentor's information

Your title goes here with only the first word capitalized
Your Name, Your Department, Your School, City, State ZIP
Your Mentor, Department, Brookhaven National Laboratory, Upton, NY 11973

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean facilisis luctus erat sed blandit. Nullam varius elit a mi vestibulum, quis scelerisque dui hendrerit. Nullam convallis augue id ullamcorper semper. Phasellus sed lacus pulvinar, placerat magna vehicula, scelerisque velit. Quisque magna mi, suscipit non velit a, viverra condimentum dolor. Duis tempus convallis gravida. Phasellus pharetra sit amet neque eget pretium. Cras consectetur tortor at ligula vulputate, sed malesuada elit volutpat. Fusce scelerisque, est non ornare fermentum, quam nisi imperdiet mauris, at tristique purus dolor in lorem. Fusce scelerisque odio vitae lorem iaculis rhoncus. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Etiam cursus tempor condimentum. Integer tempus adipiscing viverra. Aliquam erat volutpat. Suspendisse potenti. Maecenas mollis suscipit nisl, vel egestas nisi tincidunt non. Proin lobortis nisl vitae fringilla convallis. Morbi varius laoreet risus, eu tincidunt leo iaculis aliquet. Aliquam et orci metus. Nulla posuere, quam sit amet porta iaculis, turpis justo dignissim arcu, vel adipiscing arcu nunc at sapien. In vitae libero in eros accumsan scelerisque. Curabitur congue commodo dui a consectetur. Nam luctus dolor non est posuere vulputate. Nullam ipsum ipsum, elementum a tristique vel, congue eget est. Aliquam non sem eros. Nullam urna neque, hendrerit vel sem vestibulum, faucibus vehicula libero. Maecenas eleifend mauris purus, eget aliquet nunc dapibus in. Vivamus non nibh nisl. Cras condimentum gravida dui, a imperdiet nibh consequat eget.

Acknowledgement Texts

Community College Internships (CCI)

This project was supported in part by the U.S. Department of Energy, Office of Science, Office of Workforce Development for Teachers and Scientists (WDTS) under the Community College Internships Program (CCI).

Science Undergraduate Laboratory Internships (SULI)

This project was supported in part by the U.S. Department of Energy, Office of Science, Office of Workforce Development for Teachers and Scientists (WDTS) under the Science Undergraduate Laboratory Internships Program (SULI).

Brookhaven National Laboratory Supplemental Undergraduate Research Program (SURP)

This project was supported in part by the Brookhaven National Laboratory (BNL), (Name of Department) under the BNL Supplemental Undergraduate Research Program (SURP).

Brookhaven National Laboratory-Virginia Pond Scholarship Program (VPSP)

This project was supported in part by the Brookhaven National Laboratory-Virginia Pond Scholarship Program under the VPSP-Supplemental Undergraduate Research Program (SURP).

Nuclear Physics Research Traineeships (NPT)

This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics Research Traineeships to Broaden and Diversify Nuclear Physics program.

“I,” “we,” and impersonal constructions

Brookhaven National Laboratory

“I,” “we,” and impersonal constructions (1) --*AIP Style Manual*, pp. 14-15

The old taboo against using the first person in formal prose has long been deplored by the best authorities and ignored by some of the best writers. "We" may be used naturally by two or more authors in referring to themselves; "we" may also be used to refer to a single author and the author's associates. A single author should also use "we" in the common construction that politely includes the reader: "We have already seen .... "But never use "we" as a mere substitute for "I," as in, for example, "In our opinion ... ," which attempts modesty and achieves the reverse; either write "my" or resort to a genuinely impersonal construction.

“I,” “we,” and impersonal constructions (2)

The passive is often the most natural way to give prominence to the essential facts:

Air was admitted to the chamber.

(Who cares who turned the valve?) But avoid the passive if it makes the syntax inelegant or obscure. A long sentence with the structure

The values of ... have been calculated.

is clumsy and anticlimactic; begin instead with I [We] have calculated ...

“I,” “we,” and impersonal constructions (3)

The author(s)" may be used as a substitute for "I [we]," but use another construction if you have mentioned any other authors very recently, or write "the present author(s)."

“I,” “we,” and impersonal constructions (4)

Special standards for usage apply in two sections of a paper: (i) Since the abstract may appear in abstract journals in the company of abstracts by many different authors, avoid the use of "I" or "we" in the abstract; use "the author(s)" or passives instead, if that can be done without sacrificing clarity and brevity. (ii) Even those who prefer impersonal language in the main text may well switch to "I" or "we" in the acknowledgments, which are, by nature, personal.

Brookhaven National Laboratory

Questions

Questions?

- A version of this presentation is posted at https://www.bnl.gov/education/resources.php under the Writing Guidelines heading.