

2ND HOW TO WRITE **A SUCCESSFUL** LaserNetUS PROPOSAL

MODERATED BY:



PANELISTS:









OPENING REMARKS





I-USE: Intense-light USers Engagement Committee





TODAY'S AGENDA



Welcome (10 AM - 10:05 AM)

What is LaserNetUS? (10:05 AM - 10:30 AM)

Crafting a Successful Proposal (10:30 AM - 10:55 AM)

Writing Resources and Your Next Action Steps (10:55 AM - 11:05 AM)

Q&A Panel (11:05 AM - 11:55 PM)

Closing Remarks (11:55 PM - 12 PM)





LaserNetUS Overview

Chandra Breanne Curry LaserNetUS Coordinator 2nd How to Write a Successful LaserNetUS Proposal October 25, 2022





CHANDRA BREANNE CURRY

LaserNetUS Coordinator and Project Scientist with MEC-U Project

Experience:

- Performed >30 high-power laser experiments around the world
- PhD with HEDS/SLAC and the ECE Department at the University of Alberta
- Graduate and postdoctoral fellowships from the Natural Sciences and Engineering Research Council of Canada (NSERC)

Research Topics:

- Inertial confinement fusion (BSc research at LLNL)
- High-intensity laser-plasma interactions
- High-repetition rate target systems

Current role:

- Appointed as the LaserNetUS Coordinator by DOE FES in Nov. 2021
- Working to expand the user community and establish connections between LaserNetUS and the MEC-Upgrade project







EXPERIMENTAL TIME IS AWARDED THROUGH A PROPOSAL PROCESS. SO, WHAT IS IT?

A research proposal is a formal document that explains:

- WHAT you plan to research (*i.e.* your topic); convinces the Proposal Review Panel
- WHY it's worth researching (*i.e.* your scientific case and broader impact); and explains to the LaserNetUS facility personnel
- **HOW** you plan to investigate it (*i.e.* your experimental methology)

Main steps from idea to award:

- 1) Identify topic/research area and primary/secondary LaserNetUS facility
- 2) Contact LaserNetUS facility POCs to discuss proposed experiment
- 3) Prepare proposal and iterate on technical details, as required, with LaserNetUS facility technical staff
- 4) Submit proposal by Dec. 19, 2022 at 4PM PST
- 5) Proposal reviewed by the Proposal Review Panel
- 6) Short-listed proposals sent to LaserNetUS facilities for Technical Feasibility Review
- 7) Final list of awarded experiments announced in Spring 2023





CYCLE 5 CALL FOR PROPOSALS: TIMELINE

Science





CYCLE 5 CALL FOR PROPOSALS: GUIDELINES, NOTES, IMPORTANT DATES

		Q	Q Join Us > (=)		
LaserNetUS	About Us	Our Facilities	Publications & News		
Home > Proposal Review Process					
Proposal Review Process					

Proposal Submissions

LaserNetUS encourages scientists from diverse fields to propose experiments utilizing the consortium's wide-ranging capabilities. International Principal Investigators are welcome. We recommend that scientists describe well-posed experiments. Proposals must include brief discussions of the expected scientific or technological impact and anticipated feasibility and probability of success of experiments. Proposals that include a clear description of the expected schedule, indicating the scope, have a better chance of being selected.



For full details of calls for proposals visit: https://lasernetus.org/proposal

The Cycle 5 deadline to submit a proposal is Dec. 19, 2022 for experiments starting in Sept. 2023.





OUTLINE

- What is LaserNetUS?
- LaserNetUS by the Numbers
- Access & Networking
- Workforce Development & Community Growth
- Science areas benefiting from the use of highpower lasers







THE LASERNETUS NETWORK



The mission of LaserNetUS is to advance and promote intense ultrafast laser science and applications by:

- Advancing the frontiers of laser-science research;
- Providing students and scientists with broad access to unique facilities and enabling technologies;
- Fostering collaboration among researchers in related fields around the world.











INTENSE-LIGHT USERS ENGAGEMENT (i-USE) COMMITTEE



Ronnie Shepherd Chair LLNL Amina Hussein





Co-Chair

UAlberta

i-USE is the User Group of LaserNetUS. The mission of i-USE is to grow the highintensity laser community by:

- <u>Supporting users</u> on the LaserNetUS facilities;
- Advocating for member facilities and the user community;
- Providing an official channel of communication between users and LaserNetUS management;
- <u>Fostering collaborations</u> with the research community and industry; and
- Promoting <u>training and education</u> of students, post-docs and early-career scientist in lasermatter interactions;





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Facilities span high impact laser regimes





LASERNETUS BY THE NUMBERS





LASERNETUS AIMS TO REESTABLISH



Upcoming petawatt laser projects surpass current state-of-the-art MEC-U (1 PW)

- 150 J, 150 fs, 10 Hz
- 1.5kW
- Plans exist for future upgrades: e.g. dual-PW

ZEUS (3 PW)

- 75J, 25 fs, 1/min
- 1.25W

OMEGA EP OPAL (75 PW)

- 2kJ, 20 fs, 1/20 min
- 2W





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DEVELOPING PROPOSAL WRITING RESOURCES TO SUPPORT NEW USERS

How to Write a Successful LaserNetUS...

Webinar on how to write a successful

proposal organized by I-USE

HOW TO WRITE A SUCCESSEUL LASERNETUS PROPOSAL

Watch on 🕞 YouTube

Watch later Share

Dr. Arianna Gleason Proposal Review Panel Chair

Proposal template with detailed instructions, examples, and writing prompts

	La La	LaserNetUS Proposal for Cycle 5		
	Earl	Cycle 5 Experiment Dat iest start date will depend of	es: September 2023 – July 2024 n facility readiness and proposal feasibility	
	Title of Proposed E	Proposal Deadline:		
	Provide a descriptiv awarded experimen	e title of your proposed exp t time.	periment that you would be willing to be made public if	
Proposal Template Instructions				
While our proposal format has changed, it is still limited to 6 pages in PDF format, not including three appendixes: (1) references; (11) tentative research team; and (111) a technical parameter table.	Spokesperson: First Name Last Na Division/Departmer	me at		
This is the official template which must be used for proposals submitted for consideration of experimental time by LaserNetUS in Cycle 5. The grey baces throughout the document provide section specific character limits (including spaces), instructions, and writing prompts. They should be deleted before submission.	Institution Job Title/Role Mailing Address Li Mailing Address Li E: abc@xyz.edu	ne 1 ne 2		
The content should be written in Times New Roman 11pt font, single-spaced, and aligned in mode "justify". Please make sure to set the following normal margins: top, bottom, right: 1.0" (2.5 cm); left: 1.0" (2.5 cm). Figure captions can be Times New Roman Spt font.	T: +1 (xxx) xxx-xx0 Lead Principal Inv First Name Last Na Division/Denostrue	estigator (PI): me	Co-PI(s): First Name Last Name Division Dependence	
Use the following main sections, appearing in bold, and include additional numbered subsections as needed to enhance the readability of the proposal.	Institution Job Title/Role		Institution Job Title/Role	
If this proposal is the continuation of a previously awarded experiment on any of the LaterNetUS facilities, a <u>ane-exper</u> progress report should be uploaded separately in the proposal submission system. It should include: the proposal number(s), dates of experiment(s), facilities/instrument(s) used, and a brid summary of the experiment and how results have been disseminated (list major invited talks, papers published on inpress, overvalor special recognition)	Mailing Address Li E: abc@xyz.edu T: +1 (xxx) xxx-xxx	ne 2 (x	Mailing Address Line 1 Mailing Address Line 2 E: abc@xyz.edu T: +1 (xxx) xxx-xxxx	
If you have any questions on the use of this template, please contact <u>Chandra Breanne Curry</u> or <u>Arianna Gleason</u> .	The 'Spokesperson' conceives of the ide most cases, the 'Spo	The "spokesymmetry in the primary point of contact for the proposed experiment. The Load P1 pipelilly conceived of the data, design the experiment and tank the experimental team and analysis effort. It most eases, the "Spokesperson" and 'Lead P1' are the same. A Co-P1 is required for all submissions whom a student or postdoc is the Lead P1. In this case, the Co-P1 is projectly the supervisor on a succeived to provide the necessary relation, coversight, finding, and resources to successfully execute the experiment. Additionally, the Co-P1 will be contacted of the standardiproduct leaves the field provide the necessary relation of the co-P1 will be contacted of the anadomization leaves the field protection technicism, exc. This information is collected in appendix II. Tentries Research Team. This information is collected in appendix II. Tentries Research Team. This information is collected in appendix II. Tentries Research Team. This information is collected in appendix II. Tentries Research Team. This information is collected in appendix II. Tentries Research Team. This information is collected in appendix II. Tentries Research Team. This information is collected in the supervision of the supervision of the support provided by the facility.		
	A Co-PI is required PI is typically the st resources to success student/postdoc lear			
	A list of all particip include students, de in appendix II: Tem experience and staf			



C. B. Curry | ccurry@slac.stanford.edu | 19



PRIORITIZATION OF BROADER IMPACTS IN ADDITION TO INTELLECTUAL MERIT



Impact on the Scientific Ecosystem & Society

How broadly will the project impact the scientific and technical HED and high-intensity laser community in the US, and translate to a broad impact on society?

- Who benefits? What is the benefit?
- Are you a new user to laser platforms/experiments?

Impact on Workforce

To what extent will the project attract new talent, develop existing staff, provide mentorship?

- Growth of the community and field
- Cross-collaboration with new fields?
- Strong emphasis on student/early career engagement





LASERNETUS ENCOURAGES STUDENTS AND EARLY CAREER RESEARCHERS TO BE LEAD PI



2022 LaserNetUS Users' Meeting August 16-18, 2022 Fort Collins, CO



- The 2.5 day meeting was hosted by Colorado State University in Fort Collins, CO
- 165+ attendees, 43% of the contributed talks were by graduate students
- LaserNetUS provided support for 40 students to attend the meeting and present their research



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INNOVATION DRIVEN BY HIGH-POWER LASER TECHNOLOGY



Medical - hadron therapy for cancer treatment, bloodless surgery

Security – sensitive-nuclear-material detection

Accelerators – compact laser-based accelerators

EUV Lithography – extending Moore's Law, semiconductor industry

Inertial Confinement Fusion - enabling laser fusion power

Non-destructive Imaging - identifying internal flaws/defects in manufactured components

Adapted from illustration by Phil Saunders





NETWORK CAPABILITIES ENABLE A BROAD RANGE OF SCIENCE & APPLICATIONS







TOMOGRAPHIC IMAGING WITH AN INTENSE LASER-DRIVEN GAMMA-RAY SOURCE



- Higher resolution, directional source improves imaging
- High-value industrial applications, e.g. aerospace
- Global security: detect hidden nuclear material









A NEW PLATFORM FOR ULTRA-HIGH DOSE RATE RADIOBIOLOGICAL RESEARCH

Evaluating the radiobiological effects of laser-accelerated protons



- Investigate the FLASH-RT effect for improved radiotherapy using laser accelerated protons
- Ultra-high dose rates in in vitro cultures of normal human prostate cells and tumor derived cells studies





DYNAMICS OF MINERAL NUTRIENT DISTRIBUTION AT THE CELLULAR TO WHOLE-PLANT LEVELS

Dynamics of mineral nutrient distribution and homeostasis, at the cellular to whole-plant levels





GLOBAL INSTITUTE FOR FOOD SECURITY

Growing science for life

Nutrien - a Founding Partner

- Crop productivity and resiliency rely on the acquisition and distribution of mineral nutrients to both plant vegetative and reproductive organs
- The overall goal of this research is to establish the real-time changes in the translocation and distribution of mineral nutrient elements, at the cellular to whole-plant levels, under nutrientlimited conditions.
- X-ray absorption (XRA) platform based on Laser Wakefield Acceleration (LWFA).





Effect of P levels in the nutrient solution on shoot growth in 4-week-old cucumber plants.





OUTLOOK

- LaserNetUS is experiencing rapid growth attracting users from a broad range of topical areas from all around the world
- LaserNetUS is taking a multifaceted approach to attract, provide opportunities, and support student and early career researchers
- We are developing tools and resources to support users from broader communities (e.g. medicine, biology, private industry)
- Proposals for Cycle 5 are due Dec. 19, 2022 at 4PM PST



QUESTIONS?

Creating a brighter world and better humanity through the innovation and use of high-intensity lasers.





LaserNetUS

Proposal Review Process & Overview Crafting a Successful Proposal

Arianna E Gleason LaserNetUS PRP Chair

i-USE Webinar on 'How to Write a Successful LaserNetUS Proposal' October 26, 2022





Chair Introduction

Arianna E. Gleason

- @SLAC for over a decade, Adjunct Faculty at Stanford Geoscience Dept. & Mechanical Engineering at University of Rochester; Guest Scientist at LANL & LLNL
- Background in shock physics & HEDS; Ph.D. from UC Berkeley in 2010; Director's/Reines Postdoc Fellow at LANL
- FES Early Career Awardee 2019
- Member of FESAC Long Range Planning Committee & APS-DPP-CPP
- LaserNetUS PRP Chair; other DOE Lightsource PRP member
- LCLS User Executive Committee former member and Chair
- Current panel member for Basic Research Needs/Roundtable Reports @ DOE:
 - FES International Benchmarking 2023
 - FES Inertial Fusion Energy 2022
 - BES Innovations in Nuclear Energy 2022





The Proposal Review Panel (PRP) is responsible for the evaluation of LaserNetUS proposals for scientific and technical merit

- The PRP was established as an independent and confidential committee to evaluate LaserNetUS proposals for recommendation for facility time across the 10 institutions
- Best practices are drawn from DOE, NSF, APS, NIF, LDRD and other PRP review processes
- Proposal submission and review has been done with assistance from SLAC

Chair: Arianna Gleason, SLAC/Stanford (Cycles 4,5,6); Tammy Ma, LLNL (Cycles 1,2,3)

Proposal Administrator: Paul Jones, SLAC & LCLS Users' Office A. Gleason | ariannag@Stanford.edu| 33 LaserNetUS Coordinator: Chandra B Curry, SLAC



The Review Process has 5 stages

- 1. Pre-Review / Conflict of interest (COI) stage
 - PRP members will review a list of proposal titles, PI's, and institutions. COIs will be identified.
- 2. Initial PRP Review Stage
 - Each proposal is assigned 3 reviewers; primary and secondary assignments
- 3. Final PRP Review Stage
 - Full group discussion and numerical score to rank each proposal
 - Re-categorized by facility
 - Consensus will be reached by the entire PRP and comments collated for PI feedback

4. Facility Feasibility

The top ranked proposals for each facility will be sent to the Facility Directors for evaluation
of technical feasibility

5. Final Decisions

• PRP review and Facility Feasibility are integrated to develop a final list of awards





Merit is most important!

Originality, Uniqueness, and Scientific Merit

To what extent does the proposal articulate a fundamental intellectual advance or a fundamentally new approach to expanding knowledge, understanding, or a new capability?

Qualifications of the PI and Team

How well-qualified are the PI and team?

Organization and Conception

In the proposal, how well-organized and presented is the idea? Is the technical approach feasible?

Resource Scope

Is a LaserNetUS laser system required for this experiment? To what extent does the proposed work fit within the limits of an experimental slot? Impact is important too!

Infrastructure Enhancement

To what extent will the project enhance the scientific, technical or engineering infrastructure of LaserNet ?

Impact on the HED Scientific Community & Society

How broadly will the project impact the scientific and technical HED and high-intensity laser community in the US, and translate to a broad impact on society? Bring new users?

Dissemination of Results

How broad of an audience will the project results be shared with and will the results be interesting enough to garner significant attention?

Impact on Workforce

To what extent will the project attract new talent, develop existing staff, provide mentorship?





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Appendix

- Clearly shows and justifies the need to investigate a research
- Presents a set of workable strategies
- for conducting the proposed research
- Sci or Tech Case Hypothesis-driven proposal narrative & Key-questions
 - Discovery science & Applied science & Capability/Technical Advancement
 - ENP Details To address the research scope, which laser system(s) and why?





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ExpDetails

Appendix

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- Presents a set of workable strategies
- for conducting the proposed research
- Sci or Tech Case Hypothesis-driven proposal narrative & Key-questions
 - Discovery science & Applied science & Capability/Technical Advancement
 - New to lasers?

Platforms/methods/diagnostics?

- Let us help you!
- Reach out to i-USE Committee to ask for resources and guidance



Impact is important too!

Infrastructure Enhancement

To what extent will the project enhance the scientific, technical or engineering infrastructure of LaserNet ?

• Growth of the community and field

- Cross-collaboration with new fields?
- Student/early career engagement is so important

Impact on the HED Scientific Community & Society

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Dissemination of Results

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Impact on Workforce

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Please do not just answer yes/no, do not say a few words under each bullet point

Scientific Ecosystem Stewardship and Broader Impact Character Limit: 2,000 Workforce development and expanding the scientific ecosystem around the use of highpower lasers are key missions of LaserNetUS. In this section, we would like you to provide context for how the proposed work supports these values.

Questions which may be used in the PRP's evaluation of the proposal:

- Does this proposal provide academic or training opportunities to students or early career researchers? If so, are the results of the proposed experiments for a thesis project? YES and YES
- What is the intended audience for these results? What is the venue or format that the experimental results will be shared? Colleagues studying IFE; Conferences and peer reviewed publications
- Describe how this proposal will increase or sustain community interest in the topical area (e.g. follow up experiments, new funding applications/research programs)?
- To what extent does this proposal engage underrepresented groups or institutions?

Other questions you can consider, if applicable:

- Does this proposal engage with a new research group or institution that has not previously been involved with LaserNetUS?
- To what extent will the project enhance the scientific, technical, or engineering infrastructure of LaserNetUS and result in a potential asset for the larger community?
- Is the proposed work from a topical area which has not yet been awarded time through LaserNetUS?
- Is the proposed experiment part of a larger project or program (e.g., NNSA Center of Excellence, Laboratory Directed Research and Development (LDRD), multiinstitutional agreements)

Impact is important too!

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What to Expect After Proposal Submission?

PRP meets in Feb. 2023

Response letters with feedback are composed for every submitted proposal to LaserNetUS

• Awarded or Declined

Announcements to be sent by Mid/Late March 2023

Reach out to me: <u>ariannag@Stanford.edu</u> And/or Chandra Curry: <u>ccurry@slac.Stanford.edu</u>





Writing Resources & Your Next Steps



WRITING RESOURCES



Weekly Writing Support I-USE Friday Office Hours





WRITING RESOURCES



Drop-In Writing Support Office Hours on Zoom 823 7037 8696

Every Friday, thru Dec 16 10 am – 12 pm Pacific

Need Help? Not Sure? Drop in! First office hours is this Friday!



WRITING RESOURCES



General Proposal Questions Send these to: ccurry@slac.stanford.edu





Your Next Steps



LaserNetUS

TODAY

- Watch for email with today's slides
- Review list of facilities on LaserNetUS website
- Reach out to facilities
- Dry run submission





THIS WEEK

- Reach out to facilities, including BACKUP facilities
- Watch for email with webinar recording
- General Qs: ccurry@slac.stanford.edu
- General Writing Support: I-USE Friday Weekly Writing Office Hours



Office of



NOVEMBER

- Write proposal and get support!
- Continue back-and-forth with facilities, including BACKUP facilities
- Attend Virtual Town Hall on Nov. 15 (10am 12pm Pacific)
- General Qs: ccurry@slac.stanford.edu
- General Writing Support: I-USE Friday Weekly Writing Office
 Hours



DECEMBER

- Write proposal and get support!
- Submit proposal by Dec. 19 @ 4PM
- General Qs: ccurry@slac.stanford.edu
- General Writing Support: I-USE Friday Weekly Writing Office Hours





Q&A with Previously Successful Applicants









Ms. Franziska Treffert SLAC and TU Darmstadt Graduate Student PI



Dr. Sophia Malko PPPL Postdoc Pl



Dr. Dean Rusby LLNL Early Career PI



Dr. Sven Steinke Marvel Fusion Industry Pl



Dr. Sasi Palaniyappan LANL National Laboratory PI

Moderated by:

- **Dr. Jennifer Elle** Air Force Research Laboratory
- Prof. Scott Feister
 California State University
 Channel Islands









Conclusion





THANK-YOU FOR ATTENDING

- To learn about the proposal guidelines visit: <u>https://lasernetus.org/proposal</u>
- The deadline to submit is Dec. 19, 2022 at 4pm PST.
- If you have questions:
 - General Questions: Email the LaserNetUS Coordinator (<u>ccurry@slac.stanford.edu</u>)
 - Or, for Writing Support / Getting Started: Visit I-USE Weekly Friday Office Hours
- Virtual Town Hall for Cycle 5 is Nov. 15, 2022 from 10am-12pm PST

