Report Title: ERCAP Requests Details
Run Date and Time: 2019-10-03 05:28:29 Pacific Daylight Time
Run by: PDF Generator User
Table name: u_ercap_requests

ERCAP Requests

This request is a renewal.:	true		
ERCAP Number of Request to Renew:	ERCAP0010622		
ERCAP Number:	ERCAP0014263	Allocation Year:	2020
Project Title:	Analysis and Simulation for the GlueX Detector	State:	Draft
		Revisions required:	
Short Project Name:	GlueX	Rejection Reason:	
PI Name:	Lawrence, David (davidl)	Project Class:	DOE Mission Science
PI Name Company:	Jefferson Lab	DOE Program:	NP - Nuclear Physics
PI Name Email:	davidl@jlab.org	Sub Program:	NP - Accelerator Physics
PI Name Business phone:	7572695567	Science Category:	Physics : NP (Experment)
		Repo:	m3120

Personnel

Senior Investigators:

Mark Ito
David Lawrence
Alexander Austregeslio

Authorized Preparers:

Lawrence, David (davidl), Watson, Chip (cwatson), Larrieu, Christopher (larrieu)

Funding

DOE Office of Science funding:

true

Funding Office:

DOE Office of Science Nuclear Physics (NP)

Funding Program Manager:

Fai, George (gfai)

DOE/SC Grant, PAMS, FWP numbers:

This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics under contract DE-AC05-06OR23177

Federal Agency other than DOE/SC:

false

Other Funding/Agency Source(s):

List Other Federal Agency and funding numbers:

State, local, or foreign government or agency:

false

List governments that apply:

University:

false

Universities and project funding information:

Non-profit Organization:

false

Non-profit Organization funding:

Other:

false

List other entities that apply:

Office of Science relevance:

Security

I attest that this project adheres to these guidelines. :	true	I request an exception to these policies, based on the following::	false

Please Explain Policy Exception:

Project Details

Project Summary and Goals:

The primary project goal will be to analyze data taken with the GlueX detector from a set of ongoing nuclear physics experiments at the Jefferson Lab accelerator. The analysis will consist of extracting timing and energy deposition information from the data in order to reconstruct individual particle interaction events. The analysis will produce the momentum, direction, and type (particle ID) of each particle detected in each reaction. The statistics of these reaction particles can then be used to measure fundamental physical properties of the excited states of the target + photon system, leading to an understanding of the underlying particles (quarks and gluons) and the forces among them.

Project Description for DOE Managers:

We plan to perform the first stage reconstruction of the data from the GlueX experiment at NERSC. This will require transferring the raw experimental data from JLab to NERSC, producing the "data summary tapes" (DST) files, and transporting them back to JLab for further analysis. Our current plan is to try and focus larger scale full passes over the data at NERSC allowing us to use our time on the local JLab cluster for the smaller campaigns that require quick turn around. The NERSC jobs will do the most CPU intensive part of the analysis. Specifically, charged particle tracking, calorimeter cluster finding, and matching reconstructed objects between detectors.

Website URL:

https://halldweb.jlab.org/wiki/index.php/GlueX_Project_Overviews

Accomplishments Summary:

We have completed first pass reconstruction of GlueX Phase I data that was acquired in 2018. GlueX is a major Nuclear Physics experiment being performed at at the Jefferson Lab accelerator to explore the nature of the strong force. The experiment produced 3PB of experimental data in 2018 and NERSC has played a siginificant role in providing the computational resource for the processing of that experimental data.

Refereed Publications:

None (publications from data processed in 2019 at NERSC are expected in late 2020 and 2021)

Non-refereed materials:

Resources

NERSC Hours Used:	53,411,469	NERSC Hours Requested:	162,000,000
Archival Storage Used (TB):	0	Archival Storage Requested (TB):	1
Project Storage Used (TB):	0.042	Project Storage Requested (TB):	1

Justification for Request:

Estimate was based on:
1. prior experience with processing 2018 data at NERSC
2. anticipated data from Fall 2019 and Spring 2020 run
Some details can be seen here:
https://halldweb.jlab.org/doc-public/DocDB/ShowDocument?docid=4183

Key Events or Deadlines:

We anticipate a campaign lasting approximately 6-8 months with the allocation being used at a more or less steady state during that time.

Do you need real-time computing?:

false

Explanation for Realtime Computing Needs:

Experimental or Observational project?:

true

Special Requirements:

This project is a series of experiments that will be ongoing for several years. We plan to resubmit each year pending successful use of the NERSC facility.

Codes

Please tell us about your most used/important codes (select up to 5):

2

Code 1 Name:

JANA

Code 1 URL:

https://www.jlab.org/JANA/

Code 1 Description:

GlueX data analysis

Code 2 Name:

Hall-D Reconstruction Code

Code 2 URL:

https://github.com/JeffersonLab/halld_recon

Code 2 Description:

Reconstruction of GlueX data

Code 3 Name:

Code 3 URL:

Code 3 Description:

Code 4 Name:

Code 4 URL:

Code 4 Description:

Code 5 Name:

Code 5 URL:

Code 5 Description:

Supporting Information

Other HPC Support:

XSEDE allocation award on PSC Bridges:
- 5.9M units
- equivalent to 31M NERSC hours on Cori II regular queue for our jobs

JLab SciComp Farm:
- 37.3M core-hours
- equivalent to 154M NERSC hours on Cori II regular queue for our jobs (91M on Cori I)
- Will be used primarily for calibration, monitoring and other non-production reconstruction jobs

OSG:
- Used for Monte Carlo simulation

- Primarily single threaded and unsuitable for raw data reconstruction given our 20 GB file size and how long it would take to process using one thread

Additional Information:

Our jobs are somewhat small (single node for 7hours) compared to many NERSC jobs. There is strong evidence that the majority of our jobs are run via backfilling meaning that we fill in cracks in the schedule which may otherwise go unutilized.

Feedback:

Overall very good and less painful than XSEDE. One thing missing on the resources tab is a box to request temporary storage space (i.e. scratch). The nature of our project is to upload files to NERSC for processing and then download the results to JLab for permanent storage. All of the files are then deleted. We don't really use much project space nor have need for long term storage at NERSC. We end up making a separate request every year for additional scratch space to buffer all of the data we to pass through NERSC. It would be nice if that could be included in this form as well.

Usage Agreement

Usage Agreement Initials:

DL

Award Information

Approval State:

Not Yet Requested

Hours Requested:	162,000,000	Hours Awarded:	
Archival Storage Requested:	1	Archival Storage Awarded (TB):	1
Project Storage Requested:	1	Project Storage Awarded (TB):	20

Approver:

Award Status:

Draft

Record History

Computational Allocation Type:	DOEMISS	Archive Allocation Type:	DOEMISS
Computational Current Allocation:	58,500,000	Archival Current Quota (TB):	1
Computational Repo ID:	61032	Archival Repo ID:	61033
Computational Resource ID:	1004	Archival Resource ID:	1006
Project Directory Repo:		HPSS Only:	false
Current Project Storage Quota (TB):	1	Renewed by ERCAP Request:	
Project Directory Repo ID:		Program Manager (historical):	
Project Directory Resource ID:		AY Year Start:	January 14, 2020
NIM Project ID:	61031	AY Year End:	January 11, 2021
Sponsoring Organization:	Jefferson Lab	Does PI work at a federal agency or national lab?:	true

Related List Title: Attachment List
Table name: sys_attachment
Query Condition: Table name = u_ercap_requests AND Table sys ID = f427092cdb1c4c10200f7d321f961950
Sort Order: None

Value of property 'glide.pdf.max_columns' must be less or equal than 25. Default column number applied

Value of property 'glide.pdf.max_rows' must be less or equal than 5,000. Default max row number applied (1,000)

1 Attachments

File name	Content type	Created	Created by
ERCAP0014263 Export(2019-10-01 20:24:16).pdf	application/pdf	2019-10-01 13:24:17	davidl